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ABSTRACT

To study the impact of school finance reform on minorities and the poor, researchers gathered data on educational revenues and spending, tax effort, district wealth and income, ethnicity, and urban location in California, Colorado, Florida, Michigan, New Mexico, and Texas. Their data analysis used various measures of educational equity and fiscal neutrality as well as univariate, bivariate, and multivariate statistics and time-series analysis. The research yielded a large number of findings, including no large changes in educational revenues for minorities and the poor after the reforms; only small decreases in spending disparities and wealth-related inequalities; and both increases and decreases in educational income among districts with different ethnic compositions. This volume of the report also highlights analysis of data on Florida school districts. These data reveal greater spending disparities and ethnic isolation among schools within each district than across districts. The authors recommend that future research on educational equity and the disadvantaged examine the relationships of cost to quality and of equity to equality, the distribution of educational resources, socioeconomic and demographic influences, and the role of federal aid. Appendices provide scattergrams, a discussion of and guide to research methodology, and lists of variables. (RW)

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MINORITIES, THE POOR AND SCHOOL FINANCE REFORM

VOL. 1: AN IMPACT STUDY OF SIX STATES

Robert Brischetto and David Vaughan

A Report Submitted to the National Institute of Education
U.S. Department of Health, Education and Welfare
Contract No. 400-76-0136

JULY, 1979

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INTERCULTURAL DEVELOPMENT RESEARCH ASSOCIATION

MINORITIES, THE POOR AND SCHOOL FINANCE REFORM

Robert Brischetto, General Editor

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PREFACE

When the history of the school finance reform movement of the 1970s is told, chorniclers will remind us of something lost amidst the flourishes of the reforms: that the impetus for funding education more equitably originated in the educational needs of poor and minority children.

It was in behalf of the educational needs of Black children that the Supreme Court in its 1954 Brown decision set off a series of desegregation suits which made the 14th Amendment the chief weapon for combating inequalities in education.

It was because of the special educational needs of children--particularly poor, urban, Black children--that initial attempts were made to achieve school finance reforms through the courts in the cases of Burrus v. Wilkerson and McInnis v. Ogilvie in the late 1960s. These earlier suits were lost on appeal and their strategy of focusing on "educational needs" was abandoned in favor of a more judicially manageable standard of "fiscal neutrality"; but the problem of unequal educational opportunities for poor and minority pupils in schools remained.

Although many of the plaintiffs in the fiscal neutrality suits were poor and minority children, the central issue which they raised was the unfairness in the burden of taxation for all residents in property-poor school districts, not discrimination against poor people *per se*. As such, a number of solutions were offered which, in principle, would seem to meet the fiscal neutrality standard.

What remained unclear is just what effect the application of such fiscally neutral solutions would have on poor and minority children. Some reformers thought that surely children with greater educational needs would benefit from the fallout of the school finance reforms and that a reform which eliminated discrimination against poor districts would do the same for poor children. Other reformers warned that the legislation which followed the responses to the judicial mandate for fiscal neutrality would not improve--and could worsen--the relative position of poor and minority children in high wealth-high cost school systems. Now, after five years of reform legislation, we should be able to answer the question of what impact the reforms of the 1970s have had on poor and minority students. It is with this purpose that we undertook our research.

Our research, while sponsored by the Intercultural Development Research Association (IDRA) of San Antonio, has been a joint effort with several school finance study projects originated by the National Urban Coalition (NUC). Indeed, it was Robert Bothwell, the former director of the School Finance Division of NUC, who was instrumental in proposing that this research be conducted in cooperation with these projects. His successor, Michael Hodge, has continued this support. The original intent of the research was not only to study the impact of school finance reforms on minority and poor populations, but to provide minority researchers with the data and statistical tools necessary to continue monitoring reforms in their respective states well beyond the termination of the study.

The report consists of nine volumes. This volume (Volume 1) reports the findings of the six states study from a comparative perspective across states.

Volumes 2-6 are detailed reports on the impact of school finance laws on poor and minority pupils in five of the six states in our study: Texas, California, Florida, New Mexico and Colorado, respectively.

Volume 2 reports on the impact of the 1975 reform in Texas. It was written by Robert Brischetto, project director.

The California report (Volume 3) was written by Robert Singleton, former director of the Education Reform Project of Los Angeles, in collaboration with Joseph Garcia and Ruben Espinosa of the California School Finance Reform Project at San Diego State University. Paul Goldfinger of Berkeley prepared the data files on California.

David Vaughan, our programmer and statistical analyst, conducted and reported on the analyses in Florida (Volume 4) and in New Mexico (Volume 5). Elizabeth Vaughan was in charge of data file management and analyzed data and researched the history of school finance in New Mexico.

The Colorado report (Volume 6) was written by Renee Montoya, and Gayle Whiteneck of the Colorado School Finance Reform Project of the Chicano Education Project, Lakewood, Colorado.

Volume 7 by Robert Brischetto is a research note which provides additional evidence for discrimination against Mexican American and poor children in the Texas system of funding education.

Volume 8 by Paul Dimond, an Ann Arbor attorney involved in school finance litigation efforts, gives an historical overview of school finance reform litigation in the context of other education reform litigation on behalf of urban, poor and minority children. Some of the funding for this paper was from the National Urban Coalition. Michael Hodge, director of the Education Finance Division of NUC, was instrumental in securing support for this volume.

Volume 9 by Robert Brischetto is a summary report which gives a general overview of the findings of the six states study and discusses the implication of those findings for public policy makers.

In addition to the authors cited above in this joint research effort, I am indebted to the support staff who plied their skills to this project. Carol Cockrell of Trinity University assisted in conducting the analyses. Jackee Cox of the IDRA Texas School Finance Reform Project researched the history of Texas school finance and assisted by editing some of the state reports. Leo Zuniga, of the IDRA staff, wrote an historical overview of Michigan school finance. The data for Michigan were provided by Stephen Carroll and Millicent Cox of the Rand Corporation in Santa Monica, California.

I am also grateful to Sylvia Davis, project secretary, for her tireless efforts in typing hundreds of tables and to IDRA staff members Delia Diaz, Rosario Trejo, and Martha Corrales for their clerical support. Very special appreciation goes to Maribeth Bains for coordinating the typing of the final report and to Cindy Sokclowski and Susan Hartman for typing the final revisions.

Walter I. Garms, Professor of Education at the University of Rochester, provided descriptions of the school finance formulas and critiques of some of the state reports. W. Norton Grubb, Assistant Professor in the LBJ School of Public Affairs at the University of Texas at Austin, served as a methodological consultant in the conduct of this study. Likewise, I am grateful to Charles Benson of the University of California at Berkeley and Robert Burnett of the Stanford Research Institute for their comments on earlier drafts of this report.

I wish also to thank David Mack, project officer with the National Institute of Education for his consultation in the conduct of this research and James Foxx of N.I.E. for comments on the reports. Finally, I am deeply indebted to José A. Cardenas for his constant support and good counsel well beyond the point at which funds were used up.

It is my hope that the beneficiaries of this research will, in the final analysis, be the poor and minority children who inspired this study in the first place.

Robert Brischetto
Project Director
July, 1979

INTRODUCTION

The decade of the seventies has witnessed the rapid growth of a reform movement in education finance which has swept through both the courts and the legislatures with a building momentum. Since the landmark Serrano decision in 1971, few states have been immune from challenges to inequities in their school finance systems. Between 1971 and 1979, legislatures in more than half of the 50 states have responded to the court mandates by enacting reform legislation of varying types and efficacy.

Now the increases in educational expenditures which accompanied these reforms are being threatened by a taxpayer revolt exemplified by the "Jarvis-Gann" initiative in California. By enacting Proposition 13 on June 6, 1978, California's "silent majority" spoke out loudly to legislators throughout the country with the message that they may face the prospect of undoing their legislative reforms in trade for tax relief.

At some point the forces for reform will likely regroup and counter with new legislative proposals for challenging the manner in which education is financed from local property taxes. Each proposal will no doubt be scrutinized more carefully this time in regard to its cost and its probable return on the educational tax dollar. The funding of this study represents a concern for how children--particularly members of minority groups and the poor--are affected by the types of reforms which are being proposed. To protect the interest of these students, new legislative proposals for greater equity in funding education should be informed by the knowledge of what effects the last round of legislative reforms had on these students. This study has as its purpose the investigation of how legislation in six states has redistributed revenues for the education of poor and minority children.

Chapter 1 reviews the various conceptualizations of equity in the funding of education as they are employed in the courts and in the legislatures and examines these notions in light of their implications for poor and minority children. After examining some of the first evaluations of recent reform legislation, we arrive at a set of empirical questions that are addressed in our research on the impact of school finance reforms on poor and minority children in six states. Chapter 2 gives an overview of the methods we employed in our research and the assumptions that underlie these methods. Chapter 3 presents a summary of the findings with particular attention to comparisons among the six states. Chapter 4 presents the results of a school-level analysis of spending disparities as they relate to ethnic concentration in Florida. Chapter 5 gives the recommendations for further future research on funding education for poor and minority populations. Appendix A contains scattergrams depicting relationships between ethnic concentration and district wealth and revenues. Appendix B discusses the methodological issues involved in school finance research on equity for poor and minority students. Appendix C is a step-by-step guide to the procedures followed in our research with specific instructions on how it might be applied in other states. Appendix D contains a listing of the files of variables for each of the six states involved in the study.

CHAPTER 1

THE RESEARCH PROBLEM

This research is one of a series of studies funded by the National Institute of Education to evaluate the impacts of school finance reforms passed in the 1970s. Our major concern is with the impact of the reforms on pupils of various ethnic and income groups in six states--California, Colorado, Florida, Michigan, New Mexico and Texas. The words "impact" and "reform" are used rather loosely here. Ultimately, the "impact" of education can be determined only by examining the results of schooling, in cognitive achievements and in its effects on the life chances of students. Our research is considerably less ambitious than this; we limit our scope to the financial resources input into educational systems. How these dollars are translated into educational programs and how, in turn, the programs affect the immediate and future lives of children should be a very high priority concern of the next round of evaluations.

In characterizing the legislation enacted in the six states under study, we use the term "reform" advisedly and without any suggestion that the laws were effective. The 22 states included in the universe from which we sampled in 1976 are identified by school finance experts as "reform states" simply because the state enacted a law which changed, at least in part, the form of the system of raising and/or distributing revenues for education with the purpose of bringing about a more equitable system of funding.[1]

Realizing full well that these legislative reforms were not enacted with the explicit intent to change patterns of financing for minority or poor students, we set about the difficult but necessary task of examining the manner in which the changes in state funding formulas indirectly affected the distribution of educational revenues to districts in which these students are attending school.

Our research was designed to focus on four major issues:

Issue 1. How do the federal, state and local resources available to poor and minority students compare with the resources available to other children?

Issue 2. Have the resources available to poor and minority students increased relative to that of other students with the passage of the new finance laws?

Issue 3. What types of financing arrangements tend to have the most beneficial effects for poor and minority communities and what types tend to have the least beneficial effects?

Issue 4. What new legal strategies are suggested by the findings of the above inequities?

The first two research issues are straightforward empirical questions which involve the presentation of descriptive univariate and bivariate measures of school finance resources as they are distributed among poor and minority student populations.[2] The bulk of this report will concentrate on addressing these first two issues.

The third and fourth issues involve a series of difficult value judgments concerning what the ideal resource distribution pattern(s) would be based on some notion of which effects would be "most beneficial" and which would be "least beneficial" for poor and minority students. Political judgments are involved in deciding which legal strategies would be advisable in view of the findings of our research. Addressing the last two issues will be considerably more difficult than the first two; indeed, it may be impossible, depending on the outcome of the empirical analyses.

What this research really concerns is the issue of what consititutes an equitable distribution of educational resources among ethnic and income groups. The concept of educational equity deserves some definition from the outset, since the literature on this topic has generated many different (and sometimes conflicting) notions of equity in education.

DEFINITIONS OF EDUCATIONAL EQUITY

"Educational equity" and its synonym, "equality of educational opportunity," are "sponge concepts"; over the years they have absorbed a variety of meanings through repeated use. They have been dramatized in the courts in almost every state, politicized in the legislatures, popularized in the media, and operationalized in the research journals. Arthur Wise, a decade ago, identified nine different operational definitions of "equality of educational opportunity."[3] Since then, a number of these and other definitions have been used in empirical research to measure the extent of equity in education finance.[4]

A distinction must be made here between equality and equity. Probably the most accepted definition of equality is sameness; in school finance, equality of inputs would mean equal resources or dollars per pupil. Equity, on the other hand, implies equal treatment of equals and unequal treatment of unequals.[5] A frequently cited example of this distinction involves the distribution of food. The distribution of equal amounts of food to people who were similar in their hunger and need for nourishment would be equitable; by the same token, in a population which is very unequal in degree of hunger and nourishment, providing more food to the hungry than to the sated would be equitable. In the case of funding education, equity might involve unequal expenditures per pupil with greater amounts being expended on those students with greater educational needs.

A definition of what is equitable requires value judgments about what is a justifiable basis for unequal treatment, how inequality will be measured, and what type of unequal treatment and how much of it is warranted. As Berne points out, when making policy decisions we are faced with the task of comparing the inequity of one distribution with that of another or measuring different degrees of inequity.[6] Converting a distribution to a measure in order to make comparisons involves value judgments. In discussing problems of measurement in equity analysis, a review of the more common conceptualizations of educational equity and how minority and poor children are considered (or not considered) in these definitions will provide a backdrop for our research.

Guarantee of a Basic Education

The philosophy that every citizen is entitled to a basic education found its earliest expression in the flat grants. The granting of equal amounts of state dollars per pupil characterized aid programs in every state at the turn of the century. In 1906, Ellwood Cubberly offered a variation in the flat grant, suggesting that funds be distributed on a per classroom rather than per pupil basis in order to aid rural areas where educational costs per pupil were higher.[7]

But the flat grant, because it does not distribute state aid inversely according to wealth, tends to perpetuate inequalities in local ability to raise revenues for education. Districts with large tax bases receive the same amount of minimum guarantee as poorer districts and thus are able to maintain a spending advantage with less local effort. Since 1975, when Connecticut enacted an equalization formula, no state relies primarily on the flat grant as the chief means of distributing state aid, although some states incorporate flat grants as part of their total state aid package. Frequently, states with foundation programs will provide a guaranteed minimum of funding per pupil regardless of how much is raised locally, which is equivalent to providing a flat grant to rich districts only.[8]

In keeping with the much-cherished American value of local autonomy, the minimum foundation program was originally designed by George Strayer and Robert Haig to achieve a reduction in the degree of inequality in expenditures and at the same time preserve the value of local control over the level of spending. The concept was operationalized by Strayer, Haig and Paul Mort in a formula which purportedly guaranteed each child "an adequate minimum offering everywhere, the expense of which should be considered a prior claim on the state's economic resources."[9] In other words, a minimally adequate amount of dollars per pupil is guaranteed to each district. If a district cannot raise the guaranteed offering at a given state-mandated tax rate, the difference is made up by the state. Furthermore, if a district wishes to raise additional dollars for education, it can levy additional local taxes. This formula has been adopted in one form or another by a majority of the states during the past 50 years.

As the predominant mode of funding in the nation, the minimum foundation program has been the target of most of the litigation by school finance reformers. The main criticism of this concept is that the minimumly adequate level of funding is usually not the dividing line between basic educational needs and "educational frills" as its theory indicates. As Charles Benson points out,

> districts are generally free to spend what they wish in excess of the foundation program, and the richer the district the easier it can raise its school expenditure to high levels ... High spending districts use their wealth to command the services of large numbers of superior teachers and to provide them with high-quality supplies and equipment.[10]

Thus, local autonomy exists only for districts who have the fiscal ability to command additional educational resources. This same criticism of the California foundation program was offered by the trial court in *Serrano*, when it declared that

> substantial disparities in expenditures per pupil will continue to exist under S.B. 90 and A.B. 1267. The reason for this is that essentially local wealth is the principal determinant of revenue, that high wealth districts do not need to make the same tax effort as low wealth districts in order to reach, let alone exceed, the level of the foundation program.[11]

In our research, we will attempt in those states with foundation programs to determine to what extent local enrichment above the foundation program level contributes to inequalities in educational spending and how minority and poor children are affected by these disparities. We will also attempt to ascertain the effect of the reform law on the disparities in educational spending which are due to local enrichment by wealthier districts.

The Fiscal Neutrality Standard

The fiscal or wealth neutrality criterion of educational equity was developed as a litigative rather than as a legislative strategy, challenging the inequities which had cropped up under the foundation programs of the past half century. As such, it is a negative definition, precise and limited in scope.[12] As framed by Coons, Clune and Sugarman and adopted by the *Serrano* court, it reads: the level of funding for education may *not* be a function of wealth other than the wealth of the state as a whole.[13] The chief purpose in framing such a concept for litigation was to challenge the relationship between local wealth and educational spending, which is almost universal among the states.[14] Hickrod remarks in this regard that "...it is ironical that the United States courts have chosen to attack one of the strongest empirical relationships known to exist among school finance variables."[15]

After nearly a decade of litigation centering on fiscal or wealth neutrality basically two different ways of measuring this concept have emerged, what Friedman and Wiseman refer to as "simple neutrality" and "conditional neutrality."[16] *Simple neutrality* is the condition which exists when the distribution of educational expenditures among districts of different property wealth is not related in any systematic way to the distribution of wealth among school districts. If there is no association between property wealth and expenditure level, the system is wealth neutral in the simple neutrality sense.

Conditional neutrality, on the other hand, allows for the consideration of "exceptional characteristics" of the pupils or districts among which educational revenues are distributed. Only after controlling for such exceptional characteristics must the relationship between wealth and expenditures disappear for there to be fiscal neutrality. The exceptional characteristic most commonly referred to in this version of fiscal neutrality is tax effort. Thus, if a given tax rate produces the same amount of total local plus state revenues for education in each district, the system is wealth neutral.

Although a number of legislative responses might be fashioned to satisfy the fiscal neutrality criterion, however defined, the most common response has been one which guarantees equal yield for equal effort in keeping with the notion of conditional wealth neutrality. Such a definition has more to do with taxpayer equity than with student equity.[17]

The "equal yield for equal effort" principle is not a new one. For over 60 years the finance strategy for meeting this criterion of equity has been known as "percentage equalizing." In the more recent school finance reforms, this approach has taken at least two other variations: the "district power equalizing" (DPE) and guaranteed tax base formulas. Although they differ in the factors emphasized, the three formulas are mathematically equivalent.[18] Michigan and Colorado are two states included in our study which adopted variations of the district power equalizing or guaranteed yield concept.

The philosophy behind the district power equalizing formula is what Coons, Clune, and Sugarman refer to as the principle of "subsidiarity": decisions should be made at the level closest to the decision situation.[19] Applied to the funding of education, this means that the decision as to what will be the level of spending in a district will be made on the local district level. If a district chooses to tax itself at a given rate, the state would guarantee the same level of spending as any other district taxing at that same rate--a guaranteed local yield. But what if a district's tax rate choice is directly related to its wealth? Is the system wealth neutral? This paradoxical situation has caused school finance experts to distinguish _ex ante_ and _ex post_ concepts of fiscal neutrality.[20]

By simply examining the formula, one can ascertain whether or not a proposed solution is wealth neutral in the procedures for distributing state aid. This would be the _ex ante_ standard of wealth neutrality, since fiscal neutrality can be determined _out of prior_ knowledge of how the distribution system works. But a very different conclusion might be reached if one utilizes the _ex post_ standard and examines the relationship between wealth and spending level from an examination of the _results_ of the distribution system. Thus, a formula may guarantee a given amount of revenue for each unit of effort and be fiscally neutral in the _ex ante_ sense, but if wealthy districts in fact choose higher tax rates, the relationship between district wealth and spending level is preserved and there is not fiscal neutrality in the _ex post_ sense.

Our research was concerned with whether the reforms reduced wealth discrimination significantly and, if so, to what extent greater wealth neutrality of either kind resulted in greater expenditures on poor and minority children. The extent to which district wealth is a factor determining expenditures for poor and minority students was examined for all six states in our analyses. We predicted that if poor and minority pupils tend to be situated in property-rich districts, attaining simple wealth neutrality would not benefit and may even be a detriment to these pupils with special needs. If, however, the circumstances are similar to those found in Texas, in which Mexican-American pupils are chiefly located in districts of relatively low wealth, these pupils would stand to benefit from a wealth neutralizing solution.[21] Our research, therfore attempted to isolate the influence of wealth on the expenditure disparities among ethnic and income groups.

Equality of Expenditures: One Scholar-One Dollar

Probably the most commonly understood notion of educational equity in the mind of the general public is the equalization of educational dollars among students. The "one scholar, one dollar" concept assumes that differences among pupils are not so relevant to education as to permit inequalities in the distribution of educational resources.[22] Few school finance experts today would accept this as an adequate definition since it fails to consider factors such as economies and diseconomies of scale, differences in pupils' educational needs, price-level differences, and other important influences on the educational dollar. Neverthless, simple equality is often employed in making empirical comparisons absent adequate measures of the factors which must be considered in making adjustments to the educational dollar for a more comprehensive difinition of equity. The intergroup comparisons made in the findings of this study are in terms of unadjusted dollars. We examine the extent to which ethnic and income groups receive equal revenues, knowing all too well that minority and poor children have special needs which may justify skewing the distribution of revenues in their favor. The statistical comparisons are made with the realization that it is equality and not equity that is being measured due to limitations in the state of the empirical art. The reader is cautioned, however, about stopping at the comparison of unadjusted dollars and encouraged to consider the fact that the figures must ultimately be viewed in the larger context of other factors in a more complete conceptualization of equity.

Lacking adequate empirical indicators of the extent to which special factors would affect the distribution of educational dollars, some judges have somewhat arbitrarily set limits to the amount of variation in expenditures that would be constitutionally permissible.[23] In Hobson v. Hansen, Judge Skelly Wright allowed for school deviations of up to five percent from the average spent on teacher salaries in Washington, D.C. Judge Jefferson in his trial court decision in Serrano II[24] set a standard of $100 per child as a threshold figure beyond which disparities in general aid expenditures would be considered unconstitutional. These attempts at setting a "maximum variance ratio"[25] are admittedly inadequate for achieving the ultimate goal of an equitable distribution in educational resources, but they do provide some temporary guidelines for reducing disparities in funding until better measures of the cost of special factors are developed.

Equality After Adjusting for Special Factors

Research in school finance equalization, as it becomes more sophisticated, is increasingly more sensitive to the multitude of factors that must be taken into consideration in achieving an equitable distribution of revenues.[26] This has led to the emergence of a definition of equity which permits variance in expenditures due to such factors as differences in educational costs, special pupil needs, district size, etc. Just which factors are reasonable criteria and the extent to which variation is to be allowed are issues currently being debated in the research literature and among policymakers.

The courts have given some indication of late that equal dollars per pupil is not an equitable distribution. In Board of Education of Levittown v. Nyquist,[27] a New York trial court declared that the state general aid formual does not resolve the problem of wealth discrimination because it fails to take into account municipal overburden and the higher cost of education in larger cities. In the Lau v. Nichols[28] case, the U.S. Supreme Court ruled that non-English speaking Chinese children in San Francisco were entitled to bilingual education, suggesting that students must have access to programs which address their special needs, even though these programs may be more costly.

Even if consensus prevailed on which factors are reasonable criteria for allowing variance and how much variance should be allowed, there would still be the problem of adequate measurement of some of these factors. Adjustment factors based on the special needs of minority and poverty pupils have not yet been adequately developed.[29] Nonetheless, there have been some attempts at classifying students according to educational needs and funding programs to meet those needs in line with their costs. The National Educational Finance Project developed a set of pupil weights by type of program on the basis of previous costs incurred by "exemplary programs." These weights have been enacted as part of the fund distribution schemes in at least two states.[30] However, cost estimates for programs designed to meet the specific needs of minority and poor children have been absent from these weighting schemes. We are only beginning to obtain cost estimates of programs geared to the special needs of language minorities.[31]

The "classification" approach to educational equity requires first that suitable educational programs be specified for students with specific characteristics. It then requires that each program be made available with sufficient funding to all students with the corresponding characteristics throughout the state.[32] In the ideal, this would entail a full-state-funding approach to school finance. While no state has implemented this model in its pure form, some 26 states employ weighting schemes as part of their state aid distribution program.[33] Comprehensive weighted pupil systems in New Mexico and Florida are examined in our research. Of particular concern to us was the extent to which more revenues were available for the education of poor and minority children as a result of a change to such a classification system. Our research on school level data in Florida also explores the extent to which minority students have been isolated by program type.

"Compensatory" Funding for Equal Results

The above definitions of educational equity have all dealt with educational inputs as arguments of the equity function--dollars, dollars adjusted for price differences, educational resources, etc. Usually, however, those expressing concern about equality of educational opportunity for poor and minority students have as their ultimate goal the narrowing of the gap in educational and economic outcomes among racial, ethnic or social class groupings.

James Coleman[34] used student achievement more than a decade ago as a standard of comparison among ethnic groups in his massive nationwide study for the U.S. Office of Education. The Coleman report has been hailed as a major "pathbreaker" which changed the focus of concern from equality of inputs to equality of outcomes.[35] Coleman found that children of different ethnic backgrounds were performing quite differently on cognitive achievement tests and that these differences could not be explained sufficiently by factors relating to differences in education resources or expenditures. Instead, the child's socioeconomic status was the major factor determining his or her test score. The implication drawn from this finding was that in order to close the achievement gap between minorities and the dominant group, it would take more than just increasing the amount of input resources available in the schools, perhaps even altering the child's home environment.

The validity of the Coleman report has been challenged repeatedly and subsequent reanalyses of his and other data have been conducted in the twelve years since Coleman released his

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findings.[36] Yet social scientists seem hardly any closer to reaching a consensus on what factors determine the achievement gap between minority and non-minority students. Considerable controversy still rages over the relative importance of "school factors" in explaining the racial and ethnic gaps in achievement.[37]

Henry Levin suggests that a more inclusive model of the extent to which social class differences stem from sources other than education such as housing, health services, nutrition and family investment in educational services and experiences be adopted. Furthermore, greater capital investment may be necessary for lower class and minority children in order to overcome the obstacles of discrimination. Finally, he concludes, "there is every indication that the differences in capital embodiment when valued in monetary terms are massive, and equalization will require both a heavy social commitment and prodigious public expenditures."[38] Just how much more must be spent on education of minorities and the poor "depends on the effectiveness of educational investment in increasing the productive capital of the disadvantaged as well as the urgency with which equality is desired."[39] Such a determination awaits experimentation with new educational and economic modes of dealing with the problem of inequalities in society.

In the meantime, academicians in increasing numbers have become willing to take the position that equity in education requires that the special needs of poor and minority children be considered in the educational funding formulas.[40] Whether these additional investments will significantly improve the test scores of these children or in long-run improve their adult incomes is not certain. There is an increasing number of radical thinkers who question the very assumption on which most of the cost-quality studies rest, namely, that statistical relationships between schooling and income can be used to predict future life chances.[41] They caution that those looking for solutions to the problems of powerlessness and income inequality will be sadly disillusioned if they expect to find them in the educational system. "Blacks certainly suffer from educational inequality," Bowles and Gintis remark, "but the root of their exploitation lies outside of education, in a system of economic power and privilege in which distinctions play an important role."[42] The evidence this school presents seems to be saying with increasing clarity that economic inequalities or even inequalities in cognitive achievement may not be solved through school finance reforms alone. Basic restructuring of educational and other institutional spheres may be necessary if the goal of equal results among ethnic and income groups is to be attained.

There is another, very different, reason for improving the educational resources available to poor and minority children that has to do with equal treatment rather than equal results. As Jencks reminds us, schools are places where children spend approximately one-third of their waking hours for twelve years. More expensive schools can provide better facilities and attract more qualified personnel. Whey should children in poor districts not be given the same opportunity as those in rich districts to enjoy a stimulating school environment regardless of its effects on their achievement?[43] As the architects of the fiscal neutrality principle have argued, "If money is inadequate to improve education, the residents of poor districts should at least have an equal opportunity to be equally disappointed by its failure."[44]

Choosing a Standard of Equity

From these different definitions of equity in funding education a variety of specific programs might be designed. Indeed, reform programs which are actually enacted are never pure in form, but instead consist of combinations of different formulae. We are learning from research in school finance that equalization is more complex than we originally envisioned it to be.

This complexity presents itself as a challenge rather than a reason for despair. We can narrow down the choices of general strategies for eliminating wealth discrimination to basically two. One is the "fiscal neutrality" approach which equalizes a district's economic capacity per pupil, insuring that each district arrives at the same spending level per pupil for a given amount of tax effort. This achieves equity for taxpayers in the district, but does not insure equity among pupils. The methods appropriate to this approach were identified above as guaranteed yield, percentage equalizing, district power equalizing, and guaranteed tax base programs.

The other general strategy is based on a social equity notion in which expenditures per pupil, after adjusting for relevant pupil and district needs and costs, are completely equalized throughout the state. In this type of system, local residents do not have the choice of the level of expenditure they wish to obtain for their children; expenditure differences are determined only by the differences in pupil needs, educational costs or other district need factors. The type of formula which would be appropriate to this notion of equity would be a full-state-funding or high-level foundation program.

Of course, a combination of these two basic approaches to funding would also be possible. For example, a foundation program might establish a basic level of spending with a power-equalized local option atop it.[45]

Even after considering elimination of wealth discrimination, differences in educational costs and pupil needs should be included in a truly equitable funding system. Unless needs and cost factors are taken into consideration in developing a state funding system, the general equalization aid designed to achieve wealth neutrality may very well work to the detriment of poor, minority and urban children. This concern stems from findings which indicate that educational costs and needs are high in low-income, urban areas.[46] Furthermore, because of the industrial and commercial property in these low-income areas, property valuations per pupil tend to be high and tax effort low.[47] A fiscal neutrality solution which is concerned only with equalizing the fiscal capacity to raise revenue per unit of local tax effort--without taking into consideration differences in costs of education and in the number of students with exceptional needs--would work to the detriment of these low-income urban areas. Unfortunately, researchers in school finance equity have only begun to grapple with the problems of adjusting revenues for important factors such as price differentials, concentrations of students with exceptional needs, and economies and diseconomies of scale.

EVALUATING THE IMPACTS OF THE REFORMS

Evaluations of the impact of recent legislative reforms might be categorized into four basic types: (1) general descriptive summaries of reform legislation in individual states with evaluative comments on the legislation's potential impact; (2) comparative conceptual commentaries on school finance reforms across states with generalizations about trends and types of reform; (3) single state empirical studies of the actual impact of particular reform laws; and (4) multi-state empirical studies comparing the impact of reforms in a number of states.

The first wo types of evaluations are not empirical in nature. They do not involve detailed investigations of the impact of reforms on particular kinds of pupil populations or school districts and thus are not the chief concern here in this brief review of research. These studies, however, are very helpful in indentifying the type of reform passed and examining trends in the structural characteristics of the state aid formulas. One notable example of the comparative conceptual commentary is the report by Norton Grubb to the National Legislative Conference.[48] Grubb notes that nine of the eleven states enacting reforms during 1973 enacted district power equalizing formulas of one sort or another for distributing state aid. These reforms represent a "marked departure from previous reliance on foundation programs and flat grants."[49]

Another descriptive summary, very useful for making comparisons across states in regard to the types of reforms passed in the various states, is the series on Public School Finance Programs published periodically by the U.S. Office of Education.[50]

The third type of evaluation, empirical studies of the actual impact of reform in a particular state, is exemplified by the work of Hickrod and his associates in Illinois.[51] Their very thorough analyses of the Illinois school finance reforms constitute a major contribution to the conceptualization and measurement of equity in education. Other single state studies include those of Daicoff, who has empirically examined the impact of the reform in Kansas,[52] and Brazer and Anderson with their analyses of the reform in Michigan.[53] Like most state evaluations, however, these studies do not report the impact of state aid changes on minority and poor pupil populations. In other states in which reforms have been enacted, state departments of education have published impact studies showing the effects of the legislation, district-by-district. The new legislation is described, changes are identified, an evaluation is given, and the impact on each district is shown in an appendix. Unfortunately, these studies have yet to take the additional step of merging ethnic pupil enrollment data and census data on income with the school finance variables to produce impact statements about ethnic pupil groupings or districts of different ethnic concentrations.

The fourth kind of evaluation--empirical studies comparing reforms in a number of states--have only just begun. The first major effort of this type was initiated by the National Conference of State Legislatures. The first publication of the findings of this research effort by Callahan and Wilkin[54] provides valuable insights into the empirical impact of school finance reform efforts nationwide. Their conclusions indicate that by and large the states have moved toward greater equity in financing education. More specifically, they note that as a result of these reforms: (1) public school expenditures have increased overall; (2) local property taxes have been reduced; (3) educational needs and costs have been addressed by these reforms; and (4) local school budget growth has been checked within certain limits.[55]

What is most notable about certain of the reforms is that they went beyond the mandate of fiscal neutrality to incorporate adjustments for education program cost differentials, disadvantaged pupils, geographic location, income and even, in two cases, for municipal overburden and cost-of-living variations.[56]

Not all states, however, have made such extensive reforms. The evaluators point out: that "only one state--Michigan--recognizes the fact that high non-school taxes curtail the ability of large cities to finance their education needs";[57] that "urban corrections ... have been facing a relatively tough road in some of the states that have them" and that "state categorical approaches to meeting urban school finance problems, while important in some states, are generally not of major significance in most states."[58]

Furthermore, the prospect that poor and minority pupils will receive the full benefit of these reforms is not a likely one since "there are some signs that recent improvements in state school finance legislation are being frustrated by the inability or failure of state administrators to ensure that poor communities take maximum advantage of new funding opportunities."[59] For example, in Florida and Utah, many poor districts have failed to identify pupils with special needs and thus do not take advantage of the increased state aid for these high-cost programs; and in New Mexico, while poorer districts have benefitted more from the pupil weighting system, they have failed to attract more qualified teaching personnel and consequently have lost some of their state aid entitlements.[60]

In spite of these shortcomings, Callahan and Wilkin conclude on a generally optimistic note about the impact of the reforms on poor and minority populations that:

> more state monies have been allocated to children who are costly to educate, and many states have developed new aid programs to meet the pressing school finance needs of urban centers and rural areas. In short, poor taxpayers and educationallly disadvantaged children have been the main beneficiaries of new school finance laws.[61]

By contrast, from a national stratified sample of districts, Brown, *et al.*, paint a pessimistic picture of the overall trends in school finance equalization for the nation as a whole and note that "reform efforts appear to have been swimming against a national tide of increasing disparities." The net effect is that "there has been no progress in the nation as a whole in closing disparity gaps."[62]

One glaring gap in all of the evaluations of the *post-Serrano* reforms is the absence of any empirical demonstration of how ethnic or income groups have been affected by the redistributions of state aid. Conclusions to this point have been inferential leaps based on impressions of how urban districts have fared in the reforms. No systematic effort has been made to identify the location of poor and minority children in the state distribution system. Thus, the conclusions from these first evaluations provided only working hypotheses to guide our research.

RESEARCH HYPOTHESES

Because of the decentralized manner in which education is funded in American society, we expected wide disparities in the amount of revenue available for education within states. Although the trend is toward a greater state contribution to educational expenditures, in virtually every state education is still funded to a large extent through local *ad valorem* property taxes. Since there are wide variations in the tax base of school districts within a state and, to a lesser extent, variations in the level of taxation, the amount of local spending per pupil is quite unequal. Unfortunately, most state aid does not adequately compensate for inequalities in the ability of district to raise revenue locally. Preliminary to addressing the issue of how revenue was distributed among minority and poor students in a state, we needed to know the extent of inequalities in the amount of state and local revenue available for education overall. Thus, our first research question (RQ) was:

> RQ 1. *To what extent do inequalities exist in the level of funding within a state prior to and following the reform?*

To the extent to which there are wide variations in the tax base from one community to another and inadequate state compensation for this inequality, the amount of revenue available for education in any district will be determined by the district's property wealth. Thus, the second empirical question was:

> RQ 2. *To what extent is the level of revenues available for education related to district property wealth before and after the reform?*

The inquiry into the extent of wealth neutrality can be subdivided into questions about simple and conditional neutrality.

RQ 2a. To what extent is the level of revenues available for education related to district property wealth regardless of the local effort?

RQ 2b. To what extent is the level of revenues available for education related to district property wealth after removing the effects of local effort?

If there were no large inequalities in the level of funding among school districts, then a case could not be made for inequalities among ethnic and income groups.

A third question preliminary to examining the extent of inequality among ethnic and income groups concerned the amount of ethnic and income group isolation.

RQ 3. To what extent are ethnic and income groups isolated by school district boundaries?

This question can be divided into two subsidiary questions.

RQ 3a. To what extent are ethnic and income groups concentrated into a few districts or widely distributed among many districts?

RQ 3b. To what extent are ethnic and income groups isolated in districts of high proportions of members of their own groups?

Having addressed the preliminary concerns, we will then investigate the issues central to our research concerning the distribution of revenues among ethnic and income groups.

RQ 4. What disparities exist among the major ethnic and income groups in average educational revenues and tax rate for each group statewide?

RQ 5. To what extent are differences in educational revenues related to ethnic and income composition of school districts?

RQ 6. What changes in the various resources available to poor and minority students and to districts of different ethnic and income group composition have occurred with the passage of the new school finance laws in the 1970s?

RQ 7. How can we account for the differences in educational revenues available to different ethnic and income groups and to districts of different ethnic composition?

The problem of explaining ethnic and income group differences in revenues can be specified further by identifying the explanatory variables, for example:

RQ 7a. What is the relationship between ethnicity (or personal income) and district property wealth?

RQ 7b. To what extent can district wealth account for differences in spending among ethnic and income groups statewide and among districts of different ethnic and income composition?

RQ 7c. To what extent can geographic locale account for differences in spending among ethnic and income groups and among districts of different ethnic and income composition?

By examining the results of the empirical research questions in each of the six states and making interstate comparisons where possible, the third and fourth issues may be addressed concerning the types of financing arrangements which tend to have the most beneficial effects for poor and minority students and the types of new legislative strategies which might be employed in light of our findings.

FOOTNOTES TO CHAPTER 1

1. The twenty-two "reform" states are Arizona, California, Colorado, Conneticut, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Michigan, Minnesota, Montana, New Jersey, New Mexico, North Dakota, Ohio, Texas, Utah and Wisconsin. We are indebted to Robert Bothwell for this list. See: Robert O. Bothwell, Richard Johnson, and Alan Hickrod, "Geographic Adjustments to School Aid Formulae," Chapter III in John J. Callahan and William H. Wilkin, Eds., School Finance Reform: A Legislators' Handbook. Washington, D.C.: The Legislators' Education Action Project, National Conference of State Legislatures, 1976.

2. "Minority" is used here to refer to any group identifiable by racial or cultural differences which is the object of discrimination historically and at present. The racial and ethnic minorities which are included in our research are: Blacks, Mexican Americans, Cuban Americans, Native Americans, and Asian Americans.

3. Arthur Wise, Rich Schools, Poor Schools: The Promise of Equal Educational Opportunity, (Chicago, Illinois: The University of Chicago Press, 1968). Chapter 8.

4. Se particularly: Robert Berne, "A Methodological Assessment of Education Equality and Wealth Neutrality Measures," A Report to the School Finance Cooperative, New York University, Graduate School of Public Administration, July, 1978; G. Alan Hickrod, "Definition, Measurement, and Application of the Concept of Equalization in School Finance," Normal, Ill.: Illinois State University, Department of Educational Administration, February, 1972.

5. Joel S. Berke, Answers to Inequity: An Analysis of the New School Finance (Berkeley, Colif.: McCutchan Publishing Co., 1974).

6. Robert M. Berne, Equity and Public Education: Conceptual Issues of Measurement, Public Policy Research Institue, Working Paper No. 4, Graudate School of Public Administration, New York University, N.Y., N.y., October, 1977. Berne's paper has a very thorough analysis of the value judgments involved in the measurement of equity.

7. Elchanan Cohn, Economics of State Aid to Education (Lexington, Mass.: D.C. Health and Co., 1974), pp. 14-16.

8. For a discussion of this point, see: Walter I. Garms, James Guthrie, and Lawrence Pierce, School Finance: The Economics and Politics of Public Education, (Englewood Cliffs, N.J.: Prentice Hall, 1978).

9. Goerge D. Strayer and Robert M. Haig, The Financing of Education in the State of New York, (New York: McMillan Co., 1923), p. 173.

10. Charles S. Benson, The Cheerful Prospect: A Statement on the Future of Public Education, (Boston: Houghton Mifflin Co., 1965) p. 86, as cited by Wise, 1968, p. 150.

11. *Serrano II*, pp. 23-24.

12. The fiscal neutrality definition does not specify *how* funds are to be distributed, only that they should *not* be related to wealth.

13. John E. Coons, William H. Clune, III, and Stephen D. Sugarman, *Private Wealth and Public Education*. (Cambridge, Mass.: Belknap Press of Harvard University Press, 1970), p.304.

14. Only Hawaii is completely free of the tie between wealth and spending since that state has only one school district.

15. G. Alan Hickrod, "Definition, Measurement, and Application of the Concept of Equalization in School Finance," p. 18.

16. L. S. Friedman and M. Wiseman, "Toward Understanding the Equity Consequences of School Finance Reform," Graduate School of Publi Policy, University of California at Berkeley, Working Paper #75, July, 1977.

17. As a taxpayer equity concept, it has been responsible for passage of more school finance reform laws than any of the arguments for student equity, according to Hickrod, Hubbard and Yang. See: G. Alan Hickrod, Ben C. Hubbard and Thomas Wei-Chi Yang, "The 1973 Reform of the Illinois General Purpose Education Grant-in-Aid: A Description and Evaluation," Department of Educational Administration, Illinois State University, Normal, Ill.

18. For a discussion of the mathematical equivalence of these formul see: Walter I. Garms, James W. Guthrie and Lawrence C. Pierce, *School Finance: The Economics and Politics of Public Education*. (Englewood Cliffs, N.J.: Prentice-Hall, 1978), pp. 194-199.

19. See: Coons, Clune and Sugraman, *Private Wealth and Public Education*.

20. For a discussion of the distinction between *ex post* and *ex ante* definitions see: Garms, Guthrie and Pierce, *School Finance*, 1978; Friedman and Wiseman, "Toward an Understanding of the Equity Consequences of School Finance."

21. The situation was one in which taxpayers in districts with high concentrations (75-100%) of Mexican American pupils were paying slightly higher local property taxes for education than students in other districts; yet the local revenues raised in predominately Chicano districts amount to about one-third of that in the districts with low concentrations (0-25%) of Mexican American students. See: Robert Brischetto and Tomas Arciniega, *Inequalities in Educational Resources: Their Impact on Minorities and the Poor in Texas and California*, Final Report, Project No. 3-2064, National Institute of Education, Dept. of HEW, Washington, D.C., 1974.

22. For a discussion of what has been referred to as the "equal-dollars-per-pupil" definition, see: Wise, *Rich Schools, Poor Schools*, pp. 155-156.

23. *Hobson v. Hansen* 326 F Supp 844 (DDC, 1971).

24. *Serrano v. Priest,* 45 USLW, 2340 (December 30, 1976).

25. For a discussion of the "maximum variance ratio" concept of equal educational opportunity, see: *Wise, Rich Schools, Poor Schools*, pp. 156-157.

26. See: John J. Callahan, William H. Wilken and M. Tracy Sillerman, *Urban Schools and School Finance Reform: Promise and Reality*. (Washington, D.C.: The National Urban Coalition, 1973).

27. *Levittown v. Nyquist* (C.A. No. 8204/74, Nassau County Supreme Court).

28. *Lau v. Nichols* 414 US 564 (1974).

29. This is not to say that personal income, particularly poverty status, and other special need indicators have not been included in education funding formulas. A couple of states now consider the number of Title I or poverty-level students enrolled in determining the distribution of state general aid. See: Hickrod, Hubbard and Yang, "The 1973 Reform of the Illinois General Purpose Educational Grant-in-Aid," 1975.

30. Garms, Guthrie and Pierce, *School Finance*, 1978, p. 200.

31. See: Jose A. Cardenas, Joe J. Bernal, and William Kean, *Bilingual Cost Analysis* (San Antonio, Texas: The Intercultural Development Research Association, August, 1976).

32. For a discussion of the "classification" definition of equal educational opportunity, see: *Wise, Rich Schools, Poor Schools*, pp. 157-158.

33. Garms, Guthrie and Pierce, *School Finance*, p. 202.

34. James S. Coleman, *et al.*, *Equality of Educational Opportunity*. (Washington, D.C.: U.S. Government Printing Office, 1966).

35. Frederick Mosteller and Daniel P. Moynihan, *On Equality of Educational Opportunity* (New York: Vintage, 1972) p. 45.

36. Ibid. See also: Christopher Jencks, *et al.*, *Inequality: A Reassessment of the Effect of Family and Schooling in America* (New York: Basic Books, 1972).

37. See, for example, Harvey A. Averch, *et al.*, *How Effective is Schooling? A Critical Review and Synthesis of Research Findings*. Prepared for the President's Commission on School Finance. (Santa Monica, Calif.: The Rand Corporation, 1972).

38. Henry M. Levin, "Equal Education Opportunity and the Distribution of Educational Expenditures," *Education and Urban Society* (February, 1973): 156.

39. *Ibid.*, p. 158.

40. James W. Guthrie, B. Kliendorfer, Henry M. Levin, and Robert T. Stout, *Schools and Inequality* (Cambridge, Mass.: The MIT Press, 1971); Walter I. Garms and M. C. Smith, *Development of a Measure of Educational Need and Its Use in a State Support Formula* (Albany, N.Y.: New York State Educational Conference Board, 1969); James A. Kelly, "Resource Allocation and Educational Need," *Education and Urban Society*, 2 (3): 251-276; Henry M. Levin, James W. Guthrie, G. B. Kleindorfer and R. T. Stout, "Capital Embodiment: A New View of Compensatory Education," *Education and Urban Society* 3 (3): 301-322.

41. Samuel Bowles and Herbert Gintis, *Schooling in Capitalist America: Educational Reform and the Contradictions of Economic Life* (New York: Basic Books, 1976).

42. *Ibid*, p. 35.

43. Jencks, *Inequality*, p. 256

44. Coons, Clune, and Sugarman, 1970, p.30.

45. The additional local leeway above the foundation program level would have to be equalized by the state in order for the fiscal neutrality standard to be satisfied. This would not completely satisfy the social equity standard, but would be in keeping with the notion of fiscal neutrality.

46. See, for example, Joel S. Berke and John Callahan, "*Serrano v. Priest*: Milestone or Millstone for School Finance " *Journal of Public Law* 21 (1): 39-47; Paul R. Dimond, "Serrano: A Victory of Sorts for Ethnics, Not Necessarily for Education," *Yale Review of Law and Social Action* 2 (Winter, 1971): 133-141; Robert Singleton, "The Black Child and Equity in School Finance: Analysis and Alternatives," Paper delivered at Harvard University Center for Urban Studies, March, 1974; Callahan, Wilkin and Sillerman, *Urban Schools and School Finance Reform*, 1973.

47. The net result in most states is a positive correlation between local revenues per pupil and urbanization. The correlations for the nation as a whole and by state can be found in: National Center for Educational Statistics, *Educational Opportunity: The Concept, Its Measurement and Application*, Washington, D.C.: U.S.

Dept. of Health, Education and Welfare, Education Division, 1978, Tables V and XVI, respectively.

48. W. Norton Grubb, New Programs of State School Aid (Washington, D.C.: National Legislative Conference, 1974).

49. Ibid., p. 1.

50. U.S. Office of Education, Public School Finance Programs. (Annual Publication) (Washington, D.C.: U.S. Government Printing Office).

51. Hickrod, Hubbard and Yang, "The 1973 Reform of the Illinois General Purpose Educational Grant-in-Aid," 1975; G. Alan Hickrod, Thomas Wei-Chi Yang, Ban C. Hubbard and Ramesh Chaudhari, "Measureable Objectives for School Finance Reform: A Further Evaluation of the Illinois School Finance Reforms of 1973," paper presented at the 1975 annual meeting of the American Educational Research Association, Washington, D.C., April, 1975.

52. Darwin Daicoff, "An Analysis of the Kansas School District Equalization Act of 1973," Selected Papers in School Finance, 1976. (Washington, D.C.: U.S. Office of Education, 1977).

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55. Ibid., p. 4.

56. Ibid., p. 1.

57. Ibid., p. 7.

58. Robert O. Bothwell, Richard Johnson and Alan Hickrod, "Geographic Adjustments to School Aid Formulae," Chapter 3 in Callahan and Wilkin, Eds., School Finance Reform, 1976.

59. Callahan and Wilkin, School Finance Reform, 1976, p. 7.

60. Ibid., p. 7.

61. Ibid., p. 1.

62. Brown et al., p. 1.

CHAPTER 2

RESEARCH METHODS

Conceptual Issues of Measurement

At the heart of the matter of evaluation lies the problem of adequate measurement. As described in the previous chapter, the purpose of this research is to measure changes in the distribution of educational revenues among different ethnic and income groups from before to after the reforms were enacted in order to determine whether an equitable redistribution was obtained. Just what constitutes a more equitable distribution depends on the goals that one sets in regard to the outcomes of the reforms.

Usually, the setting of goals is left to the policy makers. Researchers are then assigned the task of determining the extent to which the reforms measure up to standards set by the policy makers. Our research breaks from this conventional scientific procedure for a very simple reason: policy makers in the various states have not yet arrived at an agreed upon standard of equity in financing education for poor and minority children.[1] Lacking such an operational standard for evaluating the reforms, we rely upon a definition of equity which is gaining wide acceptance among school finance reformers. Under an equitable system of funding, equals are treated equally and unequals treated unequally, that is, in accordance with their special needs.

How then does one measure equity for poor and minority children? If our goal was to achieve equality of educational resources among ethnic and income groups, we would examine the distribution of educational revenues to see if the differences among ethnic and income groups were due to random variation. Since ethnic and income groups differ considerably in their educational needs, the goal of equality is not appropriate. The goal of equity, on the other hand, would dictate a distribution of revenues which insured that pupil with the greatest needs would receive the amounts and kinds of resource commensurate with those needs. Since we have no good measures of variety and quantity of educational needs of poor and minority children we are faced with a dilemma. It is a dilemma not at all uncommon in educational research: Until valid measures of the concept of equity fo poor and minority children are developed, a proper evaluation of the trends in regard to equity cannot be made; yet research on the impact o school finance systems on poor and minority children is important to th developement of the concept of equity. The solution to this dilemma lies in some compromise utilizing those operational measures which come closest to the ideal concept of equity.

As indicated in the previous chapter, the ideal of equity during the past decade since the Coleman study seems to be some vague notion of equality of educational outcomes among racial or social class groups. Equality of achievement among individuals is neither realistic nor desirable in a society which places value on **diversity** among individuals, recognizing that differences exist in motivation and ability. However, if we accept the assumption that there are no ethnic group or social class differences in motivation and ability which are genetically fixed, then a reduction of interethnic and interclass differences in achievement is both a desirable and an attainable goal in a society which supposedly strives to make such factors as race, ethnicity and social class irrelevant with respect to one's life chances. Comparing blacks and whites graphically across grade levels within regions, Coleman notes that:

> full equality of educational opportunity ... should show a convergence so that even though two population groups begin school with different levels of skills on the average, the average of the group that begins lower moves up to coincide with that of the group that begins higher.[2]

What types of educational programs and policies are needed to close the inter-ethnic and inter-class gaps?

Ideally, educational programs should provide each student with the type and the amount of educational resources necessary to achieve to his or her maximum potential. Practically, even if it could be designed with our present knowledge and technology, such a system would be too costly. An alternative ideal policy, which is both efficient and effective, would be to establish a balance between the costs and the benefits of education to achieve the "optimum" level of education for each individual.[3] However, in view of the practical limits on the extent to which educational programs can be tailored to the specific needs of individuals, we might work toward an intermediate goal of reducing social class and ethnic group differences in educational achievement. Even this goal is a formidable undertaking, requiring knowledge of the special educational needs of poor and minority children and the relationship between educational resources and benefits for each group.

Just what educational resources and how much additional revenues are needed to optimize the benefits for poor and minority students is a question that is beyond the scope of the research reported in this study and, indeed, may be well beyond the present capability of educational research. The authors of a recent report by the National Center for Educational Statistics on the concept of educational opportunity and its measurement admit to the fact that an objective needs standard is yet to be established:

> Even in the existing programs which deal with rather obvious categories such as language barriers and poverty, it has proved very difficult if not impossible to provide any objective estimate of the additional educational resources that may be appropriate.[4]

Thus, at the fundamental policy level, an evaluation of the success of an educational reform in providing for the special needs of poor and minority children cannot be made in any precise quantitative sense at this time. We have, therefore, settled for a less than precise indication of the trends in regard to intergroup differences, utilizing a general standard which suggests that, all else being equal, educationally disadvantaged groups should receive greater than average resources in order to meet their special needs.

Our intergroup comparisons were made utilizing conventional bivariate measures, the results of which should be interpreted in terms of our general standard of equity which assumes greater needs on the part of poor and minority students.[5] For example, if we found a negative correlation between the percent Mexican American of district enrollment and the total amount of revenues available for education, this would constitute an inequitable distribution; a positive correlation would indicate an equitable distribution; and a correlation of zero would simply be an indication of a random distribution among pupils in districts of different concentrations of that minority (assuming there is not a nonlinear relationship). Since no adjustment can be made for educational needs on our measures, this standard of equity must be kept in mind while interpreting the results of all of our analyses.

Sample of States

Ideally, to generalize findings to the entire country, one would select a random sample of states to be studied. However, the universe from which we drew our sample was limited to 22 states which had passed reforms from 1970 to 1975. There were other considerations which caused us to select a purposive sample of six states. Four criteria were used in choosing our sample: to include a significant number and variety of minority group members; to include a variety of the various types of funding systems; to utilize existing school finance reform projects initiated by the National Urban Coalition; and to cover a wide geographic distribution . The criterion of geographic representation was relaxed somewhat to include four of the five Southwestern states in order to examine the impact of the reforms on Mexican-Americans, a group too often ignored in school finance research.

Although it is difficult to categorize school finance systems according to a single uniform type of distribution formula, we made an effort to identify reform states in which three types of formulas seemed to be characteristic: (1) a traditional foundation school program with an increased funding floor; (2) a foundation program employing a comprehensive weighted pupil approach to estimating differences in program costs; and (3) a power equalization or guaranteed yield formula.

The following is a brief description of features of each state system included in the sample. A more detailed account of the features of each law can be found in the next chapter and in the individual state reports (Volumes 2-6).

California. The basic Foundation Program formula was maintained in the 1972 reform with variable budget limitations on districts which can be exceeded with a referendum vote. The amount of state revenue available was almost doubled, providing for a fairly powerful law. Categorical funds for disadvantaged children were a sizeable portion of the additional state aid compared to other states. California is also interesting for its variety of ethnic groups. Two projects initiated by the National Urban Coalition cooperated in the conducting of the California study, one in San Diego and one in Los Angeles.

Colorado. A radical formula change was enacted in 1973, moving Colorado from a foundation program to a guaranteed yield formula with variable budget limits and cost controls. Reform was limited by the unsolved problem of determining property valuations. Colorado has sizeable Chicano and Black populations. A National Urban Coalition-initiated project in Denver conducted the Colorado study.

Florida. The 1973 reform was a radical change from a foundation program based on teacher units to a full-time equivalent foundation program characterized by a comprehensive weighted pupil approach with 26 different program cost weights. An important feature of the Florida system both pre and post reform was an absolute limit on overall tax effort. The significance of the reform, however, was its sensitivity to pupil needs in distributing funds. A mandated school-site budgeting and accounting system passed in more recent legislation permitted intra-district analyses among schools. The relative extent of intra-district compared to inter-district inequalities could be explored in our analyses in Florida.

Michigan. In 1973 Michigan adopted a guaranteed yield program which is about as close to a pure form of power-equalizing as can be found in any state. In addition, a series of categorical programs were enacted, including compensatory education, although funds for this program constituted no more than 2 percent of all state aid. Michigan was the first--and the only--state to enact relief aid for "municipal overburden." About 98 percent of the minority group enrollment in Michigan is Black, 53 percent of which are located in Detroit school district.

New Mexico. A change from a flat grant to a foundation program with a comprehensive pupil weighting system was passed in 1974. A uniform local tax rate was enacted which,in conjunction with the fact that 85 percent of all state and local revenues are contributed by the state,makes New Mexico effectively a full-state-assumption system. The state was also of interest because of its large Hispanic and Native American population.

Texas. In 1975, Texas enacted single-factor index of full market value of property to replace the complex Economic Index for determining state aid entitlement under the foundation program. No limits were placed on taxing or spending, but an equalization of local leeway provision was included in the law. Enrichment equalization aid amounted to very little money.

Unit of Analysis: The Pupil

The "unit of analysis" refers to the manner in which the school district data are combined in the analyses. Our analyses are primarily concerned with the impact of reforms on different pupil groupings rather than on districts *per se*. Thus, the unit of analysis appropriate to this research is the pupil.

Of course, data are not available on how resources are distributed among individual pupils within a district. The basic *unit of observation* in the collection of most school finance data is the school district and the necessary assumption in utilizing district-level data is that all pupils in a given district are receiving the same amount of resources regardless of their race, ethnic group or family income. Thus, for most of our analyses, the average per pupil expenditure for a district represents the amount that is expended on each pupil in that district. District average per pupil values on the various indicators of resources and wealth are weighted by the number of pupils in the district when the various measures are computed.

An exception to this general procedure is made in our analyses of Florida school-level data. Since budget data were available on the school site level for all schools in Florida, we constructed a partial test of the rather dubious assumption we were forced to make about a uniform distribution of educational resources throughout each district. We examine school level differences in expenditures to determine the extent of intradistrict inequalities among schools which are not revealed in the district level data. Unfortunately, Florida is the only state which maintains school-site budget reporting and record-keeping statewide and thus the amount of disparity between schools within districts cannot be ascertained in other states.

The effect of the assumption that there are no intradistrict inequalities in educational resources, we suspected, would be to underestimate both the overall degree of inequality that actually exists among schools and the degree of ethnic-related disparities. A test of this hypothesis is made in the school-level analyses of Florida in Chapter 4.

Pupil Counts

Indicators of school district resources in this study, either revenue or expenditure-based measures, are expressed in dollars per pupil. The pupil measure is defined according to each state's definition of pupils in the school finance law prior to the reform. This was necessary to insure longitudinal comparisons within states which changed the method of counting pupils in the new school finance law. Average daily attendance (ADA) was the indicator of pupils in California, Colorado, Florida, and Texas. Average daily membership (ADM) was the definition of pupils in New Mexico and Michigan. Different definitions of pupils among states does not permit valid comparisons of the level of educational resources across states.

Years of Analysis

The research is longitudinal in nature; it examines the distribution of resources before and since the school finance reforms were passed in each of the states. An attempt was made to gather data for at least one year prior to the reform and each year since the reform was passed in order to identify trends in the data.

For one state, Texas, this resulted in only two years of data since the reform was as recent as 1975. In Michigan, as many as six years of data were available, four years before and two years after the reform. New Mexico has five years, Florida and California four years of data, and three years of data were available for Colorado.

Definitions of Variables

Variables included in the analyses were indicators of educational resources, property wealth, personal income and poverty, ethnicity, and community type. A definition of each variable along with a description of the source of the data and how the variable was treated in the analyses is presented in this section.

Educational Resources. The term "educational resources" can be broadly construed to refer to the entire array of inputs at all stages in the educational process, ranging from books and supplies to the quality of instruction provided in the classroom. This research employs indicators of educational resources in a more limited sense to refer to the amount of dollars spent per pupil for education. For the most part, this means revenues made available for education from local, state and federal sources. Different types of expenditures were also analyzed in some states, such as capital expenditures, current operating expenditures, and expenditures for teacher salaries. The revenue and expenditure measures served as the chief dependent variables, the variations in which are to be accounted for in our analyses.

As mentioned previously, the ideal procedure would have been to adjust the educational dollars according to price differences among and within states. Lacking adequate indicators of differences in educational costs, we did not make such adjustments in the revenue and expenditure data. The figures represent the actual dollar amounts per pupil within each state.

District Property Tax Effort. Another concern in our research was with the distribution of tax effort among various ethnic and income groups. Tax effort was measured by the amount of total tax rate in mills per dollar of equalized property valuation.[6] No attempt was made in our research to remove the amount of tax revenue raised for debt service except in Michigan.[7]

District Property Wealth. District property valuations vary widely among states in the extent to which they represent the true district property wealth. An attempt was made to obtain equalized property valuations for districts in each of the six states in the study. In three states, Florida, Colorado and New Mexico, assessment-sales ratios were obtained for each district and applied to state department of education assessed valuations. The actual validity of the equalized valuations is not known since assessment practices vary among and within states. Caution must be exercised in any interpretation of the actual equalized property valuations. There is considerable discussion in the literature about how district property wealth should be expressed---per pupil or per capita (i.e., per person in the population). While the arguments in favor of a per capita measure of ability to pay are convincing, the per pupil measure is most commonly used and is also used in this study.

District Personal Income. Census data were obtained on the 1969 aggregate family income of district residents according to

1974-75 school district boundaries. The mean family income of district residents was calculated for each school district in which census data were available.[8] Census data were not available on districts with less than 300 pupils. This excluded a large number of small districts from the analysis in California, Colorado, Michigan and Texas; but the number of pupils in these small districts amounted to less than three percent of all pupils in any one state.

The number and percent of children of school age (5-17 years) in families with incomes below the official poverty level as defined by the Orshansky Index were also included in the data file for school districts of 300 or more pupils enrolled.

Both indicators of family income were used as independent variables in the analyses in order to identify the extent of the disparities in revenues among different income groups.

Ethnic Origin. Counts of pupil enrollment by ethnic origin in each district were obtained from the state departments of education in each of the six states. The ethnic enrollment data were categorized according to specifications set forth by the Office for Civil Rights, Department of HEW, Fall survey of enrollment. Ethnic groups singled out for analysis were Blacks, persons of Spanish heritage, American Indians, Oriental Americans and Anglos. However, American Indians were examined separately only in New Mexico since they comprise less than one percent of the total school enrollment in each of the other five states. Likewise, Orientals were examined only in California since their numbers were so few in the other states. Persons of Spanish heritage were chiefly of Mexican descent in California, Colorado, New Mexico and Texas and primarily Cuban descent in Florida. This group was not separated out for analysis in Michigan.[9]

Ethnicity was treated as an independent variable in the analyses to identify disparities in the distribution of educational revenues among ethnic groups and among districts of different ethnic concentrations.

Community Type. Two measures of the locale of a district were obtained. From the 1970 census, the percentage of school district residents in urban places (of 2,500 population or more) was computed. This provided an interval-level measure of the degree of urban-ness of a school district. One problem with such a measure is that the definition of urban place does not adequately discriminate among locales of different sizes. For example, the average percent urban population in unified school districts in California is 90 percent with not much variation among unified districts.

To solve this problem, a second measure of community type or locale was obtained from state departments of education. If the state department of education defined categories of community type among school districts, these were employed in the analyses. In those states where community type categories had not been previously defined, we developed them from census data.[10] While the categories are not consistent in their definitions from state to state, they reflect more closely the relative differences among districts in each state.

Equality and Equity Measures

In order to answer the research questions posed in Chapter 1 a number of equality and equity measures were adopted. These measures are defined below with reference to the research questions to which they are addressed.

Equality Measures. Five indicators of the degree of inequality in educational revenues and expenditures were computed to answer RQ1 on the overall degree of inequality in educational revenues. These are: the range, the restricted range, the federal range ratio, the variance, and the coefficient of variation. A discussion of each is in order.[11]

The range is the difference between the extremes of distribution, the high minus the low values. The problem with the range is its inability to take into consideration values other than the extremes of the distribution.

The restricted range is defined here as the difference between value of the revenue or expenditure variable below which five percent of the pupils fall. The restricted range, like the range, refers to only two points in the distribution, but extreme values are excluded from the measure.

The federal range ratio is the restricted range divided by the value of the revenue or expenditure value below which five percent of the pupils fall. Unlike the restricted range, the federal range ratio is insensitive to the addition of a proportional amount of dollars to each unit in the distribution.[12] This measure has been utilized in proposed federal regulations and thus might be compared with other studies.[13]

The variance is simply the average of the squared deviations from the mean or the standard deviation squared. It takes into consideration every value in the distribution, but is sensitive to equal percentage increases.

The coefficient of variation is defined operationally as the square root of the variance (or the standard deviation) divided by the mean. Since the coefficient of variation measures equality relative to the mean of the distribution, it has the virtue of being useful for comparing different types of variables and different states with respect to the degree of inequality. Making comparisons in the degree of inequality across states and at different points in time.

This measure is commonly used in measuring inequality and has the additional virtue of being directly interpretable. A coefficient of variation of .200 for example, would mean that approximately two-thirds of all pupils are in districts within 20 percent above or below the state average for that particular resource.

Wealth Discrimination Measures. Recall from the discussion of the concept of equity above that while equity entails equal treatment of equals, it also dictates unequal treatment of unequals. Just what characteristics are relevant for the definition of unequals is a value judgment that must be decided by those interested in the formulation of educational funding policies. The definition of equity most frequently arrived at through litigation has been concerned with the ability to pay, that is, district wealth as a defining characteristic of unequals. Just how wealth is to be measured--by income, property valuation, or some combination of the two--and whether it is to be expressed pupil or per capita are issues on which no consensus has yet been reach. For this

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research, we have settled upon a definition of district wealth as equalized property valuation per pupil, since that is the indicator of wealth most commonly used in the research literature on fiscal neutrality.

Once the issue of defining wealth has been resolved, the problem of measuring wealth neutrality remains. There are basically two different ways in which the relationship between ability to pay and the resources available for education have been specified in the wealth neutrality literature. The first has been referred to (in Chapter 1) as simple neutrality and the second as conditional neutrality with the distinction being whether or not a special condition such as the tax rate is taken into consideration in examining the relationship between district wealth and spending level. It should be noted that simple neutrality and conditional neutrality might be mutually exclusive. This can occur when exceptional characteristics which are allowed under conditional neutrality are not identical across groups.

Our research employs measures of both simple and conditional neutrality. The simple neutrality measure is defined operationally in two ways. First, districts are rank-ordered by district equalized property valuation per pupil and divided into approximate quintiles of pupils. The mean spending level is calculated for each quintile and comparisons are made between the highest and lowest wealth quintiles in absolute dollar amounts and relatively by the ratio of expenditures in the high to low wealth quintiles. The second computation of simple neutrality is by means of bivariate regression and correlation. The Pearson product-moment correlation coefficient between district property wealth and spending level is expressed alongside the regression coefficient for that simple bivariate relationship. The Pearson correlation gives an indication of the strength of the linear association and the regression coefficient indicates how much change in spending is associated with each dollar change in district wealth.

Conditional neutrality is measured by the partial correlation between district wealth and spending level, after controlling for equalized tax rate. Also, the bivariate relationships between district property wealth and tax rate and between tax rate and spending level are examined to answer the question of whether there is indeed wealth discrimination and a violation of conditional neutrality.

Ethnic and Class Distribution Measures. Prior to examining the extent of minority and social class related disparities in educational revenues, the extent of ethnic and class isolation must be specified. If different ethnic and income groups were evenly distributed among school districts, there would be no differences in funding among ethnic or income groups on the district level of analysis. It is precisely because of residential segregation by ethnicity and social class that discrimination in funding education can occur.

Ethnic and income group isolation can be viewed in at least two ways: the extent of concentration of the group into districts with large percentages of that group of total district enrollment; and the extent of concentration of the group into districts with large numbers of group members. The first definition of ethnic isolation refers to the ethnic composition of school districts, whereas the second indicates ethnic or income group concentrations into a few districts. Both are measured by showing the distribution of students of each ethnic and income group among districts of different group percentages and numbers.

Measures of Ethnic and Class Discrimination. One of the key methodological questions in this research concerns how to "separate out" minorities from the dominant group and the poor from the non-poor in order to examine the differential effects of school finance systems on these groups of students. Two general approaches to our data analyses are used.

The first approach compares the mean spending levels among ethnic or income groups statewide. Using the total per pupil expenditure as an example, this method involves the following procedure: (1) weighting the per pupil expenditure for each district by the number of pupils of a particular ethnic or income group in that district; (2) aggregating the total expenditure across districts for the entire state; and (3) dividing the total state expenditures by the total number of pupils of that group in the state. This yields a pupil mean for each ethnic or income group.

While the pupil mean gives a reasonable overall measure of central tendency for pupils of each ethnic and income group statewide, it has all of the limitations of any arithmetic mean: it describes only the central tendency and not the shape of the distribution; the extent of variation in the distribution is not revealed; and it can be influenced by very extreme values. These limitations can be compensated for in part by examining within-group distributions, by comparing the between-group variation and the within-group variation with an F-test, and by weighting the means by the relative size of the district enrollment, thus giving less weight to the small "outlier" districts.

The second approach to examining differences in spending among ethnic and income groups involves comparing spending levels of districts of different proportions of a particular ethnic or income group. An ethnic or poverty group's concentration is related to spending by calculating the Pearson correlation coefficient to indicate the strength of the association and the regression coefficient to indicate the amount of change in spending level associated with a percentage change in ethnic composition. Additionally, districts can be ranked by percent ethnic enrollment, divided into categories, and mean level of spending can be compared among the various categories, much in the same manner as the wealth quintile analysis described above.

Multivariate Measures of Equity

In the conduct of equity research, the investigator is apt to want to look beyond the existence of ethnic-related disparities in funding for an explanation of these inequalities. This inquisitiveness brings the researcher into the realm of multivariate analysis.[14] In our study, we were chiefly concerned with two questions which require the use of multivariate methods:

1. To what extent do district property wealth and community type account for the ethnic-related inequalities in education revenues?
2. What are the relative unique contributions of wealth, effort, urbanity, family income, and ethnic concentration toward explaining variation in revenues?

The multivariate models used to address these questions are described here; the results are presented in Chapter 3 and some suggestions for future multivariate research are given in Chapter 5.

The Effect of Wealth and Locale on Ethnic Disparities. If large differences are found among ehtnic or income groups in the average amount of revenues available for education or sizeable associations are found between district ethnic or poor concentration and school revenues, explanations for these group differences or associations should be sought. In this study, two main explanatory variables are examined, equalized property value per pupil and percent urban of the district population.

Consider, first, the statewide means analyses. If, for example, significant differences were found among the various ethnic groups in mean state plus local revenue per pupil, the next analysis would be an analysis of covariance (ANCOVA) in which equalized property value and percent urban would be used as covariates. This type of analysis would allow mean differences in state plus local revenue among the ethnic groups to be examined, after property values have been statistically controlled, and therefore would indicate the extent to which differences among the ethnic groups in state plus local revenues are due to differences in property wealth. If no mean differences are found among, for example, the ethnic groups, there is nothing to explain and it is not necessary to conduct the ANCOVAs. Since large differences among ethnic group means were not found in most of the states in our study, these ANCOVAs were not presented in this volume. The analyses are reported in the individual state volumes where appropriate.

In like manner, if, for example, a significant association was found between percent Black pupils and state plus local revenue per pupil, further analyses would be conducted to determine the extent to which this association may be attributable to differences in property values or in percent urban. In this case, the analysis used is a straightforward multiple regression. In this example, the property values would be regressed against state plus local revenue, and then percent Black pupils would be added as a predictor. The increase in the R^2 (proportion of variation in revenues attributable to the predictor(s)) would indicate the extent to which percent Black is related to state plus local revenue per pupil over and above any relationship of revenues with property values. The R^2 increase would be compared to the squared correlation between percent Black and state plus local revenue to determine the extent to which this relationship is attributable to wealth variations. Again, if no relationship exists between percent Black and state plus local revenues, this type of analysis is very difficult to interpret. Difficulties occur when high intercorrelations are found among the predictor variables in a multiple regression analysis. This phenomenon is termed "multicollinearity" and may be recognized when, for example, regression weights (betas) for one or more predictors are opposite in sign from the correlations between the predictors and the criterion, or when betas are greater in absolute value than correlations of corresponding predictors with the criterion. The best conclusion that one can draw in these circumstances is that effects of the predictors on the criterion cannot be separated from one another. Unfortunately, high intercorrelations among predictors such as those used here occur frequently in the real complex world of school finance and multicollinearity problems may be expected.

The Relative Importance of Wealth, Effort, Ethnicity and Income. Multivariate analysis might also indicate the extent to which variation in revenues per pupil is uniquely related to variations in wealth, tax effort, and the ethnic and income composition of school districts. Multiple regression in the statistical technique that will be used to indicate the relative importance of these factors.[15]

Multiple regression is usually used to examine the ability of a set of predictor variables to predict, or account for, a criterion variable; that is not the goal in our research. Instead, we wish to examine the ability (or lack of ability) of certain predictors to explain or account for the criterion, over and above certain other predictors. Regression analysis is an appropriate method for analyzing the separate and collective contribution of two or more predictors to variance in a dependent variable. Suppose, for example, that we want to examine the extent to which percent Black pupils in a school district accounts for differences in local plus state revenue per pupil, over and above property wealth and tax rate. To do this, we compute two regression equations and R^2 values. State plus local revenue per pupil is the dependent variable in both of these equations. In the first equation, property wealth, tax rate, and percent Black are the predictors, and in the second equation, only property wealth and tax rate are used as predictors. To accomplish ourgoal, we compare the R^2 values from these two regression equations. If the R^2 for the three-predictor equation (termed the "full model") is significantly larger than that for the two-predictor equation (termed the "restricted model," because this equation is a restricted version of the full equation--namely, one in which the b value for percent Black is zero), then we may conclude that percent Black has explanatory power over and above that of property wealth and tax rate. On the other hand, if the difference between the two R^2 values is very small, then we conclude that percent Black has little explanatory power over and above property wealth and tax rate, and that any relationship between percent Black and state plus local revenue might be attributed to relationships of percent Black with property wealth and tax rates. We may also compute the percent of variation in local plus state revenue which is not attributable to percent Black, property wealth, and tax rate, taken together; this is equal to one minus the R^2 value of the three-predictor equation and referred to as the "unexplained variance."

As we did above for percent Black, we may examine the extent to which property wealth or tax rates can explain differences in revenues, over and above percent Black and the other of these two variables. This is done by computing two additional two-predictor regression equations, using as predictors percent Black and, respectively, property wealth and tax rate. R^2 values from these two-predictor (restricted model) equations are compared with the R^2 value of the three-predictor (full model) equation, as above.

Generally speaking, the sum of these R^2 differences is less than the full-model R^2 value. This is because, frequently, the predictors are to some extent correlated with each other and, therefore, some of the covariation between predictors and the criterion cannot be uniquely assigned or attributed to one or another of the predictors on a statistical basis. We refer to this as the "shared variance." Suppose for example, that percent Black and property wealth have a high negative correlation. We might, therefore, find that neither percent Black nor property wealth make much independent contribution to explaining variations in revenues, even though each of these predictors may correlate highly with revenues. One might argue that the reason that districts with higher concentrations of Black pupils have less revenue is because these districts have low property wealth. Conversely, these districts might have lower property wealth because they have greater concentrations of low-income Black residents.[16]

Garms employs this approach by examining the relative contribution of wealth, tax rate, needs and costs toward explaining the variation in revenue per pupil. When viewed in conjunction with the amount of unexplained variance, he suggests that these four measures "give valuable insights into the type of school finance system operated by the state."[17] Our use of this regression model is similar, although our concern is with a different set of "needs" indicators, namely, the urban, ethnic and income composition of the district.

School-Level Analyses in Florida

As we discussed above, an important limitation of this study and others of its type is due to the fact that data are available only at the school district level. Differences in school finance revenues received by ethnic and poor groups within school districts cannot be examined. This forces us into the somewhat tenuous assumption that each child within a district is receiving the same educational resources as every other child. Since Florida's 1973 school finance reform established a statewide requirement for accounting and reporting of education funds at the individual school level, school-level data were made available for the first time to allow us to examine the actual magnitudes of within-district variation statewide. Essentially, this examination involves repeating all interdistrict analyses discussed above, but using school-level results. The methodology used in these comparisons will be described here, along with some comments on the variables used in these analyses. The results of the actual analyses are presented in Chapter 4.

In Florida, as in the other states, dependent variables at the district level included revenues from various sources. Other variables included percentages of pupils in various ethnic and poor groups, mean family income, percent urban, as well as property wealth and local tax rate. Due to the nature of Florida's school-level accounting system, the only dependent variable available that is comparable to the district-level dependent variables was total expenditures; this was the only dependent variable in the school-level analyses. The census variables--percent poor, mean family income, and percent urban--are not available at the school level. Therefore, differences between poor and nonpoor pupils could not be examined. Also, property values were not available at the school level and, thus, fiscal neutrality analyses could not be performed.

Among the data items available at the school level were ethnic pupil counts by program (handicapped, vocational, etc.). These variables allow examination of questions dealing with the relative distribution of the various ethnic groups among Florida's educational programs. These are questions such as: "Are Black pupils over or under represented in vocational education programs?" To examine these types of questions, contingency tables were constructed classifying pupils by ethnic group and program. The chi-square and Cramer's V statistics were used to determine the significance and strength of association between ethnic group and program type. These analyses were done on a statewide basis and by school districts.

The availability of ethnic group membership data by program made possible analyses of ethnic group expenditure differences by program. Furthermore, analysis by program was theoretically necessary at the school level since in Florida, as in most states, schools are specialized by program to a certain degree. Usually, separate schools exist at the elementary, junior high, and high school level. Vocational programs will be found primarily in high schools. Also, special education programs for handicapped, etc., are not likely to be found to the same extent in all schools within a district. Therefore, differences in overall total expenditures are likely to be found among schools simply due to differences in enrollments of programs which generate high state revenues. Analysis by program avoids this problem and therefore is desirable at the school level.

Within the data limitations outlined above, analyses were conducted according to the procedures used in the district-level analyses reported in Chapter 3 and in the state reports located in Volumes 2-6. For comparison puposes, a set of analyses was conducted at the school level and a parallel set was conducted at the district level. The district-level data used were obtained by aggregating school-level data. These analyses were conducted separately by educational program type.

In addition to the school-level analyses, which were conducted according to the plan used in the main body of this report for district-level analyses, analyses were conducted to look at differences among schools after controlling for district differences. Generally, these analyses were designed to examine the differences which would remain among schools (and among pupils) if all district differences were eliminated. Two separate approaches were used in these analyses. In the first approach, interdistrict differences were eliminated using statistical procedures; results under this approach indicate the extent of differences among schools, averaged across the 67 districts. For the analyses of relationships between concentrations of ethnic groups and revenues, this first approach involved comparisons of zero-order correlations among these variables with partial correlations among the same variables, controlling for interdistrict differences. For the statewide means analyses, this approach involved two-way analyses of variance (ANOVAs) with ethnic group membership and district membership as the independent variables. In the other approach, separate analyses were conducted among schools within each of the districts. This approach allows districts with particularly large or small inequalities to be identified.

The Use of Statistical Tests

In the present study, extensive use has been made of statistical inference techniques. For each state included in the present study, data were available during the designated years for all districts, and these data were used. Therefore, the view might be taken that data were studied for the entire population (of districts) and that statistical inference techniques are neither necessary nor appropriate. However, the present authors believe that important inferences are made in studies of the present type and that statistical analysis can make significant contributions to this inference process. A more detailed rationale for the statistical inference used in the present study is presented in Appendix B.

FOOTNOTES TO CHAPTER 2

1. Nine equality measures and eight equity measures are compared in Berne's conceptual paper on equity and in his empirical study. See: Robert Berne, "Equity and Public Education: Conceptual Issues of Measurement," Working Paper No. 4, New York: Public Policy Research Institute, New York University Graduate School of Public Administration, 1977; Robert Berne, "A Methodological Assessment of Education Equality and Wealth Neutrality Measures," A Report to the School Finance Cooperative, New York: Public Policy Research Institute, New York University, Graduate School of Public Administration, 1978.

2. James S. Colemen, "The Concept of Equality of Educational Opportunity," *Harvard Educational Review* 38, no. 1 (1968): 7-22.

3. National Center for Education Statistics, *Educational Opportunity: The Concept, Its Measurement and Application* (Washington, D.C.: U.S. Department of Health, Education and Welfare, Education Division, 1978), p. 12.

4. *Ibid.*, p. 18.

5. While ethnic and social class background have nothing to do, *per se*, with educational needs, there are certain needs which are *shared* by members of a minority ethnic or income group by virtue of their common cultural background and social environment. For example, language differences can account for many of the differences in educational needs between Mexican Americans and Anglos. Furthermore, educationally relevant factors such as differnces in interest, educational readiness, and career objectives are often found to be related to educationally irrelevant factors of ethnicity and wealth. Thus, ethnicity or social class are often used as proxy indicators of educational needs.

6. In the individual state reports (in Volumes 2-6), the equalized tax rate is sometimes expressed in dollars and cents per $100 of equalized property valuation in order to conform to the convention utilized in each state for reporting tax rates.

7. In Michigan, the tax rate is equalized operating tax millage. Data files in Michigan were provided by the Rand Corporation.

8. The median income--which would have been preferable--was not easily calculated since the census data tapes were aggregated into income categories and interpolation of the median would have been necessary. This would have been too imprecise for our purposes.

9. Persons of Spanish heritange constituted 1.5 percent of all students in Michigan in 1973-4. Since the data files provided

by the Rand Corporation on Michigan did not distinguish Spanish-heritage and Black pupils, they were not analyzed separately. About 86 percent of the minority pupils in Michigan are Black.

10. In Florida, County school districts were classified according to the size of the largest city in the county. In California, no attempt was made to develop categories of community type.

11. For a discussion of the assumptions and value judgments involved in each of these measures, see: Berne, "Equity and Public Education," 1977.

12. *Ibid*., p. 25

13. See: *Federal Register*, March 22, 1977, Part li.

14. Garms has presented an interesting multiple regression approach to measuring the relative impact of pupil needs and educational costs. See: Walter I. Garms, *Measuring the Equity of School Finance Systems*. A report to the National Institute of Education, Grant No. 400-77-0085, December, 1978.

15. The general multiple regression model is illustrated by the following equation:

$$\hat{y} = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + . . . + b_rx_r .$$

In this general equation, y is the dependent variable, or criterion, which we are predicting, and $x_1, x_2, . . . , x_r$ are the r independent variables or predictors. The $b_0, b_1, . . . , b_r$ are constants.

In multiple regression analysis, we solve for values of the b's so that we can predict y as accurately as possible from the x's. If $\hat{y}$ is the predicted value of y from the x's, then multiple regression gives us the set of b's so that the correlation between y and $\hat{y}$ is as large as possible. This largest correlation between y and $\hat{y}$ is called the multiple correlation between the x's and y and is a measure of the strength of the relationship between the x's and y. The squared multiple correlation between the x's and y gives the proportion of variation in y accounted for by the x's and may be computed from the following equation:

$$R^2 = \beta_1 r_{y1} + \beta_2 r_{y2} + . . . + \beta_r r_{yr} .$$

In this equation, r_{yi} is the bivariate correlation between the criterion, y, and the i^{th} predictor, x_i. Also, β_i is the value that b_i, the constant value in the regression equation for predictor i, would have if that predictor had a mean of zero and a variance of one. The β_is are termed *standardized regression coefficients*, and R^2 is the *coefficient of determination*.

16. The above example illustrates the approach which was used in this section. But, as was pointed out above, correlations among the predictors make impossible a complete isolation of the effects of the various predictors on the criterion. As the correlations among the predictors become very large (this situation is termed multicollinearity), two much more severe problems may occur. The first, which always happens, is that the standard errors of the regression weights (the b's) become large. This means simply that the b's will have more fluctuation from sample to sample, and makes interpretation of the regression results more chancey.

The second problem is that the signs of some b's may be opposite from those of the predictor-criterion correlations associated with those b's. For example, the correlation between percent black and state plus local revenue may be positive (districts with greater proportions of Black pupils tend to receive more revenue than others). The correlation between property wealth and revenue may also be positive, as is the correlation between percent Black and property wealth. However, when percent Black and property wealth are both included as predictors in a regression equation, one may have a positive b and one a negative b. This general problem is referred to as a "supressor effect," and variables whose b's and predictor criterion correlations have opposite signs are referred to as supressors in the equation. In the example above, the negative b implies that as the predictor gets larger, the criterion gets smaller. However, the positive correlation between the predictor and the criterion tell us that this is not the case. In fact, what is happeining is that the positive covariance between the suppressor and the criterion has already been accounted for by the other predictor. The true function of the suppressor variable in the equation is to subtract or remove extraneous variance in the other predictor. Therefore, the contribution of a supressor variable to the overall R^2 of the equation is due to the supressor's relationship with other predictors, not its relationship with the criterion.

It may be seen that both of the problems just discussed--especially the suppressor problem--complicate the interpretation of multiple regression analyses. One solution to both of these problems is to select only one variable for inclusion in the equation from any pair or set of variables with high intercorrelations. However, this approach does not allow us to examine the relative contributions of the excluded variables in such a pair or set. Furthermore, it may not allow us to use a standardized set of predictors for different states or different years within a state. Therefore, this solution was not exclusively used in the present analyses, and these problems must be kept in mind when results of these analyses are interpreted.

17. Garms, Measuring the Equity of School Finance Systems, p. 39.

CHAPTER 3

FINDINGS OF THE SIX STATES STUDY

This chapter presents the overall findings in the six states study in a manner which would allow for comparisons among the states. More detailed analyses of the impacts of the reform in five of the six states--Texas, California, Florida, New Mexico and Colorado--are found in Volumes 2 through 6, respectively. These state reports add a number of important details to the overview of findings presented in this volume. Each volume gives an historic account of school finance and of the reform legislation in the state. The analyses are also more detailed in a number of respects. While state plus local revenue per pupil is the chief resource measure used in this volume, the individual state reports examine revenues from local, state, and federal sources separately and in combination. Also, while this volume is largely limited by our concern for presenting patterns of data which can be compared across states, the separate state reports give more detailed descriptive breakdowns of the data.

STATE FUNDING FORMULAS

School finance reforms in the six states included in this study can be classified according to three types of basic aid formulas: (1) conventional foundation programs with an elevated foundation level--as in Texas and California; (2) foundation programs with tax limits and comprehensive pupil weights for distributing revenues--as in Florida and New Mexico; and (3) district power equalizing or guaranteed yield programs providing equal revenues for equal tax rates--as in Michigan and Colorado. The major features of the systems prior to and after the reforms in these states are discussed in this section. The post-reform funding systems are described as they were operating in 1975-76.[1]

The 1972 Reform in California

In their first response to the Serrano I suit, California legislators enacted SB 90 in 1972. The effect of the new law was to more than double the guaranteed level of support under the foundation program, thus effectively bringing up the level of low-spending districts and allowing property-poor districts to reduce their tax rates. Furthermore, the state's share was effectively raised from 35 to 43 percent of all revenues raised under the foundation program.

Another feature designed as a response to the Serrano mandate was to introduce limitations on the increases in local plus state revenues from their 1972 level. Generally, taxes under the new law could be raised only to cover the costs of inflation--and the permitted inflation adjustment was lower for wealthy than for poorer districts. The loophole in this provision, however, was the possibility of overriding the revenue limits by a local vote, and the additional amount voted above the revenue limits was unequalized.[2] The potential effect of the voted override is to allow expenditure disparities to continue unabated. The potential effect of the revenue limits provision was to allow districts with increasing property values to have tax relief, since they would reduce their local tax effort as assessed valuations increased.

Perhaps the most significant feature of the 1972 reform for minority and poor children was the dramatic increase in compensatory education funds--an increase of 232 percent between 1972-73 and 1974-75. In 1974-75, some $82 million were provided for programs under the Educationally Disadvantaged Youth Act on the basis of a combined pupil needs index which considered the number of bilingual children, poverty concentration, and pupil transiency. In addition, programs for early childhood education were funded at $40 million during 1974-75 and bilingual education programs received some $4 million in state aid during that year.

In short, while the 1972 reform in California was concerned with reducing expenditure disparities and providing tax relief for poor districts, the probability of achieving these goals was limited considerably by the provision which allowed for voted tax overrides. However, the extra compensatory education funding is expected to improve the relative position of poor and minority children. While the recent reform in California addresses equity goals more adequately than did SB 90, it is not considered in this study since the data on its impact are not yet available.

The 1975 Reform in Texas

The 1975 law in Texas, like SB 90 in California, did not restructure the basic foundation program; it raised the level of the foundation program and increased the relative amount of state support. Most of the $653 million in new state funds enacted over the biennium from 1975-76 to 1976-77 went to pay for increases in teacher salaries.

After the district's allowable program costs for salaries, transportation and maintenance and operation are totaled, the district's local share is subtracted based on a computed tax rate of $.30 per $100 of full market value and the balance is paid by the state. Part of this balance is in per capita allotment (approximately $200 per pupil in 1975-76). If the per capita exceeds the district's state aid entitlement, the district still receives the total amount of the per capita flat grant.

One major change under the new law was from an outmoded and complex multi-factor index for determining a district's state aid entitlement to a single-factor index of full market value estimates was not accompanied by an overall plan for property tax reform. The market value estimates were largely self-reported values by the individual local tax assessors in the various school districts or counties and no effort was made to insure uniform assessment practices throughout the state under the new law.

Another limitation of the 1975 Texas reform was the problem of continued disparities due to unchecked local enrichment. One purpose of the reform was to bring much of what was previously local enrichment dollars under the umbrella of the foundation equalization program. Despite the additional new state revenues, the level at which expenditures were equalized under the foundation program was not sufficient to discourage districts from enriching above the foundation level since there were no limitations under the new law.

Pupil-targeted programs accounted for approximately one-fifth of all revenues under the foundation program. Half of these funds were for special education and another one-fourth for vocational education. Kindergarten, for the first time fully funded by the state, accounted for an additional 15 percent. The remaining 8 percent were for compensatory education, bilingual education and driver education. For the first time under the new law, Texas introduced compensatory education funds for the "educationally disadvantaged." These funds, earmarked for districts with concentrations of Title I pupils, provided $25.4 million per year for the program. Bilingual education programs in grades K-3 were required for districts with at least 20 pupils of "limited English-speaking ability" in any one grade and optional funding was available through the fifth grade. The funding amounted to only $25 per eligible pupil. The total allocation for bilingual education during 1975-76 was $6.2 million, although only $4.7 million was expended.

In sum, the reform in Texas amounted to a leveling up of poorer districts under a conventional foundation-type program to a funding level not sufficiently high to discourage local enrichment. For example, even after the reform in Texas the average district enriched its spending $278 per pupil above the foundation level during 1975-76. What might be anticipated from the reform on its face would be tax relief for some, but spending disparities continuing unabated although less closely tied to district wealth.

The 1973 Reform in Florida

Florida's school revenue distribution before the reform in 1973 was a conventional foundation plan (MFP) under which a district's total entitlement was based on its total number of instructional units, which in turn was based on average daily attendance. This system had several interesting features. First, school districts correspond to counties. Gerrymandering problems are reduced. Secondly, a state-established maximum local tax rate, with legislated 100% valuation, reduced the variation in local effort. In fact, most districts were taxing at or near this maximum. However, the MFP suffered from many of the problems which commonly confront foundation systems.

The Florida Education Finance Program (FEFP), which replaced the MFP in 1973-74, is also a foundation system. However, unlike the MFP, the FEFP is a weighted foundation system and like the New Mexico reform, uses counts of full time equivalent (FTE) pupils, rather than ADA, to determine the total guarantee. Under the FEFP, the entire educational program of a district is divided into 27 programs. These include three basic programs, 15 different programs for various classes of exceptional students, six different vocational-technical programs, and two adult education programs. To compute the total entitlement for a district, the number of full-time equivalent students in each program are counted. These numbers are multiplied by the cost factor for each program and summed to obtain the total weighted FTE for the district. This amount is then multiplied by the base student cost and by a district cost differential to arrive at the basic allowance for current operation. The state basic share is the difference between this allowance and the required local effort. Categorical funds, special allocations, capital outlay funds and debt service funds are added to the state basic share to obtain the total state revenue for a district. Strict minimum and maximum limits were placed on local tax rates.

The result of the Florida reform was the most comprehensive system of pupil weighting for special needs in the country, tied to a foundation program with a limit on the amount of unequalized revenue that may be raised locally. Florida was also the only state to provide a comprehensive method of adjusting for differences in cost of living.

Florida is one of a select company of four states (the others being Hawaii, New Mexico and Minnesota) which have close to _de facto_ full state assumption. There are a number of reasons for this characterization:

1. All districts were raising less than the foundation guarantee with the required local millage. Hence, the required millage is effectively a state property tax.

2. The amount that districts can raise above the foundation guarantee is severely restricted and thus only about 6 percent of operating revenues are so raised statewide.

3. The state funds a comprehensive pupil weighting system to fund children with special educational needs.

4. There is an attempt to provide for differences in cost of providing equivalent educational services across the state through a state administered cost-of-living adjustment.

5. Capital outlay and debt service are, in effect, covered in full under the state system of funding.

What is clearly absent in the reform is state aid for the educationally disadvantaged and bilingual education in a state with large numbers of Blacks and native Spanish-speaking students. Some of these programs were created in the state law, but were never funded.

The 1974 Reform in New Mexico

Before H.B. 85 was implemented in 1974-75, the distribution of revenue was based on staffing needs in 12 categories. For each of these categories, a district's Average Daily Membership (ADM) was multiplied by the state allowance to determine the number of funded staffing units. A staffing cost total was computed by multiplying a district's staffing units in each category by a fixed dollar amount and summing these amounts. Supportive costs were set at 25 percent of the total staffing costs, and total program costs were the sum of staffing costs and support costs. The state provided each district with 70 percent of its basic program costs, computed as described. This system had several problems, the foremost being that it made no attempt to equalize local wealth.

Like the Florida reform, HB 85 is a foundation program with a fixed local tax rate and, hence, essentially a full-state assumption plan. Approximately 86 percent of the non-Federal revenue for education is provided by the state.

Also like Florida, New Mexico adopted a comprehensive weighted pupil approach to funding. The first step in computing a district's allottment under HB 85 is to compute the total number of weighted pupil units, which is the sum of the weighted pupil units in twelve programs. The total is adjusted by a teacher training and experience index, and additional pupil units are added to the total to adjust for sparcity. This total is multiplied by the state per-unit guarantee ($703 in 1975-76) to obtain the total revenue guarantee to the district. The state revenue is equal to the difference between local revenue and the guarantee. Theoretically, all differences among districts in local plus state revenue are attributable to differences in program enrollments, teacher training and experience, or sparsity.

Bilingual, multicultural education is included in the basic foundation support program as an FTE add-on weight of .5 per pupil in the program. There are no additional funds provided for compensatory education for the educationally disadvantaged other than early childhood education.

The 1973 Reform in Colorado

Before the 1973 school finance reform, Colorado's public schools were funded by a foundation program. The counting unit for determining the total guarantee was average daily attendance, and districts with greater property wealth had to meet stricter local effort requirements. Districts were limited to a six percent per year increase in their total general fund expenditures.

This system had a minimum state guarantee provision; every district received a minimum specified amount of per pupil revenue from the state, regardless of local wealth or revenues. Small districts received a bonus, a categorical program covered handicapped children, vocational education, and transportation.

The Colorado Public School Finance Act of 1973 instituted a guaranteed yield formula. Under this program, each district is guaranteed a fixed minimum yield per pupil per mill of local tax. The state makes up the difference between the actual yield and the specified minimum. A substantial increase was made in the total state money to be spent on education. The new program has several other features. Each district is guranteed a specified minimum state revenue per pupil, regardless of local revenues. The expenditure increase limit continues to apply, in modified form, as does the bonus provision for small schools, Denver School District received a 15 percent higher guarantee per mill than did other districts in the year following the reform.

The purpose of a guaranteed yield system is to equalize the ability of districts to raise money, while allowing them to make choices about how much they raise. The intent, therefore, is not to decrease the range of expenditures or tax rates, but rather to break the correlation between expenditure and district wealth. However, it is clear that the revenue limit affects to a large extent the disparity in tax rate, and that result can more accurately be characterized as increased taxpayer equity, rather than student equity. The revenue limits built into the

1973 law also have the effect of continuing historical inequities which existed when the revenue limits were first enacted.

The amount of revenue channeled to poor and minority children will be influenced to some extent by the kinds and amounts of categorical funding. Under the Colorado reform, the state supports most of the cost of educating handicapped children and the $25 million allocated for this program was a four-fold increase over the pre-reform year. One half of vocational education costs are covered under the law by state aid; the $10 million appropriated was a 50 percent increase over the previous year. Bilingual-bicultural education was supported for the first time from state aid. Under the law, the state will pay all of the excess cost of this program in grades K-3. The only other "compensatory" funding went to Denver school district, which received 115 percent of the basic guaranteed level of support in order to meet the special educational needs of urban students.

The 1973 Reform in Michigan

In 1973 Michigan adopted a guaranteed yield program which is about as close to a pure form of power-equalizing as can be found in any state. Each district is guaranteed $42.40 per pupil per mill of tax rate for the first 20 mills, and $38.25 per mill for an additional 7 mills. The total gurantee is $1,116 for any district taxing at the level of the full 27 mills. Districts may tax above 27 mills, but without state equalization. There are a variety of reasons why power-equalization is almost "pure" in form in Michigan. Only about 9 percent of the pupils reside in districts where local taxes raise more than the state guarantee.

The highest rate during 1975-76 was 36 mills, and only one district levied that. There is no save-harmless provision in the law and no flat grant. The state equalized valuation which is used in calculating the district tax base for state aid purposes in equalized such that local differences in assessment practices have a minimal effect on district receipts.

In addition to its basic grant program, Michigan has enacted a series of categorical programs, including compensatory education amounting to $22 million in 1975-76, or about 2 percent of state aid and less than 1 percent of state-local revenue. At this time, to determine the compensatory education aid, districts counted the number of pupils who fell below a set standard on the state assessment tests. Districts were then ranked by percentage of eligible students and districts are given $200 per eligible pupil starting at the top of the list of districts and going down until the appropriations run out. Thus in 1975-76, districts with 15 percent or more of their pupils eligible received the full $200 per eligible pupil, but districts with 14 percent eligible pupils received nothing. Only 97 of the almost 600 school districts in Michigan received compensatory education funding in that year, including all the major city districts.

Central city districts also received relief in the form of "municipal overburden" aid. The rationale for such aid is that residents in districts where the non-education tax rate is high are less likely to vote for increases in local school taxes. The state provides a total of $27 million or about 2 percent of total state aid to those districts in which the taxes for other than school operating purposes exceeds the state average by more than 25 percent. About $22 million of the $27 million went to Detroit in 1975-76, and most of the remainder to districts in Wayne County surrounding Detroit.

In summary, Michigan has an almost pure system of power-equalizing for general aid distribution and a series of categorical aid programs for special educational needs, operating primarily on a cost-reimbursement basis.

EMPIRICAL FINDINGS

Having presented the major features of the reforms enacted in each of the six states, we should caution the reader against premature conclusions concerning the equity of these reforms from the outlines of the laws themselves. What seems apparent on the face of the reform law may not wash with the actual results of an empirical analysis. In addition to the type of funding formula, a variety of other factors enter into the distribution process to affect equity: the amount appropriated, the demographic characteristics of students and their distribution, and the interactions among the various features of the state funding formula. In this section we shall address the research questions posed in Chapter 1 and make a comparative analysis of the findings in the six states.

RQ 1: Inequality Before and After Reform

Preliminary to discussing changes in inter-ethnic differences in spending, a longitudinal view of the overall disparities within states is presented without reference to the causes or correlates of the inequalities. Five measures of the extent of inequality in resources were defined in the previous chapter and the results of these five measures are included in the state reports. This section discusses one of the indices of inequality, the coefficient of variation. The coefficient of variation was singled out as the best index of inequality because it has the virtues of (1) being easily interpreted, (2) comparability across measures, states and years, and (3) wide acceptance among researchers as a general disparity measure.

Coefficients of variation for local plus state revenue per pupil and total operating expenditures per pupil are presented in Table 1 for each year in the six states included in the study.[3] Texas was found to have the greatest amount of inequality in revenues and expenditures both before and after the reform. A relatively small amount of inequality, on the other hand, is found in Florida.

When trends are examined over time, the inescapable conclusion is that there are no large declines in the degree of inequality after passage of the reform in any of the states. Slight decreases in overall disparities are evident in California unified and elementary districts,[4] Michigan, New Mexico and Texas upon passage of the reform laws. In Colorado, there was an initial decrease in the first year following reform but an increase in the next year. In Florida, no consistent trend is found.

TABLE 1

DISPARITIES IN EDUCATION FINANCE IN SIX STATES - BEFORE AND AFTER REFORMS

State	Coefficients of Variation* Local + State Revenue Per Pupil	Coefficients of Variation* Operating Expenditures Per Pupil
California Unified		
1972-73	.186	.190
----------	----------	----------**
1973-74	.164	.181
1974-75	.145	.161
1975-76	.152	.156
California Elementary		
1972-73	.240	.224
----------	----------	----------
1973-74	.197	.208
1974-75	.180	.194
1975-76	.177	.188
Colorado		
1973-74	.186	.165
----------	----------	----------
1974-75	.175	.162
1975-76	.191	.186
Florida		
1972-73	.088	.087***
----------	----------	----------
1973-74	.107	.106
1974-75	.086	.085
1975-76	.097	.096
Michigan		
1969-70	.166	.166
1970-71	.157	.165
1971-72	.148	.163
1972-73	.154	.162
----------	----------	----------
1973-74	.137	.158
1974-75	.132	.156
New Mexico		
1972-73	.153	.182
1973-74	.181	.175
----------	----------	----------
1974-75	.169	.175
1975-76	.138	.161
1976-77	.145	.156
Texas		
1974-75	.245	.204
----------	----------	----------
1975-76	.225	.188

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* Coefficient of Variation = Standard Deviation/mean

** Dashes indicate when reform law was passed.

*** Total Revenue per pupil is substituted for operating expenditures in Florida.

One must conclude from this disparity analysis that school finance reforms have had no sizeable impact in reducing the degree of inequality in expenditures, at least in the short run. However care must be exercised when interpreting these data. Measures of dispersion such as the coefficient of variation can be used to indicate the extent of equity for poor and minority children. While the coefficient of variation provides a convenient index for evaluating the amount of overall inequality in the system, it is not appropriate for addressing equity questions when unadjusted dollars are used in the resource variable. As indicated in Chapter 1, equity considerations might very well dectate an unequal distribution of educational resources according to differences in costs and needs. There is certainly some wisdom in the suggestion that the amount of unjustifiable disparity in most state systems of funding education is so large as to justify a policy of reducing the degree of inequality overall. However, if equity is defined as distributing resources according to need, the result might be an eventual increase in overall inequality. A similar result might obtain from a power-equalizing system which allows local choice to dictate spending level. Hopefully, such "equitable inequalities" would be accompanied by a concomitant reduction in the amount of unjustified wealth-related inequality. This point seems particularly important because a number of state reforms have focused both on achieving fiscal neutrality and at the same time meeting student needs.

The present empirical reality in most states, as we shall demonstrate in the analyses which follow, seems to be that much of the inequality in spending is wealth-realted and not needs-related. Until such time as the amount of wealth discrimination in fundings is reduced to a negligible level, the inequality in revenue indicated by the coefficient of variation might also be viewed as the result of an inequitable funding system.

RQ 2: Wealth-Related Inequalities

The central focus of reform efforts in both the courts and the legislatures has been the extent to which wealth discrimination has been reduced and fiscal neutrality achieved in the financing of education. Fiscal neutrality has been operationally defined in a variety of ways. In this study, measures of simple and conditional neutrality are utilized.

Simple wealth neutrality -- the absence of any direct relationship between district wealth and spending -- can be measured by examining the bivariate relationship between district property wealth per pupil and total local plus state revenue per pupil. The magnitude of this relationship may be expressed with a Pearson product-moment correlation coefficient (r) complimented by an elasticity coefficient. The Pearson correlation tells us the extent to which district wealth covaries in a cosistent linear fashion with spending. If r is found to be significantly larger than zero. The elasticity coefficient is used to express the percent of additional revenue that is associated with each one percent of additional district wealth.[5]

Conditional wealth neutrality is treated here as the absence of a direct relationship between district wealth and spending among districts exerting the same tax effort. This special condition -- that equal tax rates be associated with equal expenditures -- can be assessed statistically by the partial correlation coefficient between district property wealth and local plus state revenue per pupil, controlling for local equalized tax rate. Thus, the conditional neutrality measure indicates the extent to which there is a consistent linear relationship between educational spending and district wealth after the effects of local school tax effort are statistically removed.

The results from applying these simple and conditional neutrality measures to the states in our study are shown in Table 2. A correlation between district property wealth and the amount of local plus state revenue per pupil which is not significantly different from zero would indicate simple wealth neutrality. The Pearson correlations were all found to be statistically significant, ranging from a high of .81 in 1972-73 among California unified districts to a low of .33 in 1976-77 in New Mexico. Most correlations were between .50 and .80, indicating a high degree of wealth-related inequality in spending in most states.

Trends over time within states are generally toward greater fiscal neutrality, as evidenced by the decreasing correlations between wealth and spending level from before to after the reforms were enacted. The decreases, however, were slight and in some cases the decline occurred prior to enactment of the reform, as in Michigan and New Mexico. In California elementary districts a decline in wealth-related disparities in spending was not evidenced until two years after the reform.

The elasticity coefficients examined in conjunction with the Pearson correlations indicate that simple neutrality is closest

TABLE 2

MEASURES OF SIMPLE AND FISCAL NEUTRALITY IN SIX STATES BEFORE AND AFTER ENACTING REFORMS

Year by State	Local + State Revenue Per Pupil with Equalized Property Value Per Pupil			Total Tax Effort with Equalized Valuation Per Pupil
	Simple Neutrality:		Cond. Neutrality:	
	Pearson r	Elasticity	Partial r (controlling for tax rate)	
California Unified				
1972-73	.81**	.310	.88**	-.47**
1973-74	.78**	.262	.81**	.02
1974-75	.76**	.226	.86**	-.20**
1975-76	.77**	.224	.86**	-.39**
California Elementary				
1972-73	.66**	.177	.81**	-.22**
1973-74	.68**	.151	.76**	.04
1974-75	.67**	.115	.74**	-.12**
1975-76	.59**	.085	.64**	-.20**
Colorado				
1973-74	.66**	.198	.77**	-.48**
1974-75	.59**	.174	.79**	-.30**
1975-76	.56**	.171	.80**	-.40**
Florida				
1972-73	.82**	.198	.76**	-.01
1973-74	.62**	.150	.63**	-.12
1974-75	.73**	.163	.73**	-.15
1975-76	.77**	.191	.80**	-.26
Michigan				
1969-70	.73**	.300	n.a.	n.a.
1970-71	.71**	.281	n.a.	n.a.
1971-72	.71**	.262	.81**	.09
1972-73	.62**	.239	.78**	.11*
1973-74	.63**	.218	.73**	.15**
1974-75	.63**	.204	.73**	.13*
New Mexico				
1972-73	.48**	.106	.45**	-.28*
1973-74	.36**	.092	.35**	-.44**
1974-75	.49**	.102	.52**	-.42**
1975-76	.37**	.062	.38**	-.48**
1976-77	.33**	.055	.32**	-.41**
Texas				
1974-75	.63**	.121	.64**	-.38**
1975-76	.54**	.088	.56**	-.33**

Significance: * = less than .01, ** = less than .001
(Dashed lines indicate when reform was passed.)
("n.a." indicates data not available.)

to becoming a reality in New Mexico, and definite trends toward simple neutrality after the reforms are found in all of the other states. In Florida, however, by the third year after reform, wealth-related inequality had returned to its pre-reform level.

Conditional neutrality would exist if a zero correlation were found between wealth and spending after controlling for tax effort. The extent of conditional neutrality is indicated in the partial correlations in Table 2.[6] We would expect to find conditional neutrality in Michigan and Colorado after their reforms by virtue of the power equalizing systems which were adopted in these states to guarantee equal yield for equal effort. The findings do not bear out our expectations: as much wealth-related disparity continued after the reforms as before. In fact, equal expenditures for equal effort was not found in any of the states studied. However, New Mexico in 1976-77 comes closest to conditional neutrality with a moderate partial correlation of .32; in the other states, the partial correlations were high, ranging from .56 to .88 with most greater than .70. In every state, partial correlations are on the whole of greater magnitude than the simple bivariate correlations, indicating that poorer districts are probably compensating for their lack of wealth by exerting greater tax effort.

A preponderance of negative correlations between tax effort and district wealth in Table 2 verifies the fact that property-poor districts by and large are exerting greater local effort in raising revenue for education than property-rich districts. One notable exception to this tendency is found in Michigan where district property wealth is directly related to tax effort, although this correlation is very low. While the various reforms seem to have generally resulted in greater taxpayer equity, as evidenced by a decrease in the size of the negative correlations between wealth and tax effort as a result of the reforms, there was an increasing tendency after the reforms for property-poor districts to bear a relatively greater burden of taxation than wealthier districts.

Correlations and regression analyses are limited in their ability to describe the actual differences in funding among districts of different property wealth. To illustrate the magnitude of differences in funding between property-rich and property-poor districts, a quintile analysis was performed. Districts were ranked by property wealth and divided into five groups, each containing approximately one-fifth of the total student enrollment in the state. An analysis of variance comparing mean level of local plus state revenue per pupil among the quintiles was performed. The results of this analysis are presented in Table 3. In all states for every year differences among quintile means were found to be significant with the exception of the two most recent post-reform years in New Mexico.

A clearer picture of the magnitude of disparities among different wealth quintiles is shown in Table 4. The first column shows the ratio of the mean amount of local plus state revenue per pupil for the lowest wealth quintile of students to the statewide mean. If the reforms were helping low-wealth districts improve their relative level of spending, there would be an increase in this ratio. Only in Texas, Colorado and California did such leveling up occur for low-wealth districts after

TABLE 3

MEAN LOCAL + STATE REVENUE PER PUPIL BY PUPIL QUINTILES OF EQUALIZED ASSESSED PROPERTY VALUATION PER PUPIL IN SIX STATES: 1972-73 TO 1976-77

Market Value Per Pupil Quintile By State	Mean Local + State Revenue Per Pupil By Year				
	1972-73	1973-74	1974-75	1975-76	1576-77
California Unified Avg	$1,006	$1,131	$1,207	$1,354	
Significance	***	***	***	***	
1 (Low)	834	1,006	1,094	1,225	
2	895	1,069	1,148	1,278	
3	944	1,085	1,227	1,338	
4	1,091	1,102	1,211	1,366	
5 (High)	1,194	1,320	1,436	1,598	
California Elem Avg	842	998	1,080	1,212	
Significance	***	***	***	***	
1 (Low)	726	895	977	1,120	
2	746	905	988	1,122	
3	806	959	1,026	1,164	
4	872	1,013	1,097	1,214	
5 (High)	1,057	1,213	1,307	1,440	
Colorado Avg		1,010	1,142	1,316	
Significance		***	***	***	
1 (Low)		833	978	1,118	
2		927	1,047	1,173	
3		981	1,093	1,277	
4		1,177	1,343	1,610	
5 (High)		1,243	1,352	1,516	
Florida Avg	954	1,187	1,344	1,375	
Significance	***	***	***	***	
1 (Low)	870	1,085	1,239	1,245	
2	925	1,149	1,263	1,292	
3	928	1,124	1,356	1,331	
4	1,000	1,292	1,447	1,486	
5 (High)	1,072	1,319	1,430	1,504	
Michigan Avg	945	1,077	1,186		
Significance	***	***	***		
1 (Low)	859	970	1,082		
2	914	1,042	1,141		
3	867	1,060	1,183		
4	1,001	1,121	1,196		
5 (High)	1,109	1,195	1,333		
New Mexico Avg	781	840	948	1,070	1,217
Significance	**	**	**		
1 (Low)	768	832	912	1,041	1,204
2	817	875	933	1,065	1,215
3	713	766	910	1,030	1,180
4	780	847	895	1,082	1,190
5 (High)	872	928	1,087	1,163	1,306
Texas Average			1,029	1,232	
Significance			***	***	
1 (Low)			768	1,003	
2			943	1,132	
3			1,041	1,213	
4			1,015	1,288	
5 (High)			1,293	1,509	

Significance Levels: * = .05 to .01; ** = .01 to .001; *** = less than .001.

TABLE 4

DISPARITY RATIOS OF LOCAL + STATE REVENUE PER PUPIL FOR POOREST AND WEALTHIEST PUPIL QUINTILES IN SIX STATES

Year By State	Ratios of Means in Local + State Revenue Per Pupil: Low Wealth Q / State Mean	High Wealth Q / State Mean	High Wealth Q / Low Wealth Q
California Unified			
1972-73	.83	1.18	1.43
1973-74	.89	1.16	1.31
1974-75	.91	1.19	1.31
1975-76	.90	1.18	1.30
California Elementary			
1972-73	.86	1.26	1.46
1973-74	.90	1.22	1.36
1974-75	.90	1.21	1.34
1975-76	.92	1.19	1.29
Colorado			
1972-73	.82	1.23	1.49
1973-74	.86	1.18	1.38
1974-75	.85	1.15	1.36
Florida			
1972-73	.91	1.12	1.23
1973-74	.91	1.11	1.22
1974-75	.92	1.06	1.15
1975-76	.91	1.09	1.21
Michigan			
1969-70	.88	1.21	1.37
1970-71	.89	1.19	1.34
1971-72	.89	1.19	1.33
1972-73	.91	1.17	1.29
1973-74	.90	1.12	1.25
1974-75	.91	1.13	1.24
New Mexico			
1972-73	.98	1.12	1.14
1973-74	.99	1.10	1.12
1974-75	.96	1.15	1.19
1975-76	.97	1.09	1.12
1976-77	.99	1.07	1.08
Texas			
1974-75	.75	1.26	1.68
1975-76	.81	1.22	1.50

passage of the reforms; even in these states, the relative improvement in spending for low-wealth districts is very slight.

The second column shows the relative position of the highest wealth quintile of pupils in comparison to the state mean local plus state revenue level. A trend toward decreasing the privileged position of the high-wealth districts would be indicated by a decrease in this ratio. Wealthy districts lost ground in every state except New Mexico, where the pattern is not a consistent one. Again, the decline in the relative privilege of wealthy districts was small.

The relative gap between high and low-wealth districts is shown in column 3. In every state there is a trend toward decreasing relative disparity between high and low wealth districts with the exception of New Mexico, where the degree of inequality did not decrease until three years after the reform was enacted. Throughout the years of analyses, however, New Mexico had the lowest degree of wealth-related inequality in spending. By contrast, Texas may have experienced the greatest decline in wealth discrimination, perhaps because of the high degree of disparity that existed in Texas prior to the reform. Even after its reform, Texas remains the state with the greatest degree of disparity with the quintile of students in the high-wealth districts receiving fifty percent more revenue for education from local and state sources than students in the low-wealth quintile. Colorado is the next most disparate in regard to wealth-related inequality, followed by California, Michigan, Florida, and New Mexico.

The quintiles analysis points to the conclusion that, while the reforms had discernible impacts on reducing the amount of wealth-related inequality in funding, the effects were on the whole very small and there remains a high degree of inequality in five of the six states included in the study. Only in New Mexico is wealth-related inequality in spending relatively low, and the data indicate that this was the case almost as much before the reform as after the reform was passed.

The relative importance of state and federal revenue in reducing wealth-related disparities in funding can be seen in the Pearson correlations in Table 5. As state and federal revenue are added, in turn, to local revenue, the correlation between district wealth and revenue declines. State revenue is clearly wealth-equalizing in all of the states after reform, although this effect is not always easily attributed to the reforms. Federal revenue, however, has only a slight but consistent equalizing effect on wealth-related disparities in most of the cases. This is remarkable considering the fact that federal revenue is not distributed on the basis of district property wealth.

Another indicator of the relative importance of revenue from the local, state, and federal levels may be found by examining the percent of revenues from each source in Table 5. With the exception of Florida and New Mexico, local taxation is the largest source of revenue for education before the reforms. The reforms increased

TABLE 5

PEARSON CORRELATIONS RELATING REVENUE PER PUPIL BY SOURCE TO EQUALIZED PROPERTY VALUE PER PUPIL IN SIX STATES BY YEAR

	Equalized Property Value Per Pupil With:					PERCENT OF TOTAL REVENUE		
State and Year	Local Rev.	State Rev.	L + S Rev.	Fed. Rev.	L+S+F Rev.	Lcl	St	Fd
California Unified								
1972-73	.86**	-.72**	.81**	.10	.76**	61.9	30.6	7.5
1973-74	.90**	-.70**	.78**	.11	.74**	52.3	41.5	6.2
1974-75	.88**	-.73**	.76**	.13	.71**	52.0	40.9	7.1
1975-76	.89**	-.69**	.77**	.07	.73**	52.7	41.0	6.3
California Elementary								
1972-73	.72**	-.43**	.66**	-.08	.64**	57.3	36.4	6.3
1973-74	.76**	-.55**	.68**	-.05	.63**	48.4	46.1	5.5
1974-75	.69**	-.47**	.67**	-.06	.61**	49.1	44.5	6.3
1975-76	.63**	-.41**	.59**	-.08	.53**	50.0	44.0	6.0
Colorado								
1973-74	.69**	-.58**	.66**	-.04	.63**	61.5	33.1	5.4
1974-75	.64**	-.44**	.59**	-.14	.54**	44.9	49.7	5.4
1975-76	.60**	-.41**	.56**	-.12	.51**	47.3	47.5	5.2
Florida								
1972-73	.95**	-.78**	.82**	-.08	.73**	35.3	55.3	9.4
1973-74	.75**	-.43**	.62**	.02	.57**	34.5	56.6	9.0
1974-75	.96**	-.65**	.73**	-.14	.61**	35.6	54.5	9.9
1975-76	.95**	-.75**	.77**	-.13	.66**	38.5	50.5	11.0
Michigan								
1971-72	.89**	-.93**	.71**	.05	.68**	56.0	38.9	5.1
1972-73	.86**	-.94**	.63**	.03	.62**	55.4	39.4	5.2
1973-74	.91**	-.93**	.63**	.02	.58**	56.6	38.6	4.8
1974-75	.91**	-.91**	.63**	-.04	.54**	57.7	36.9	5.5
New Mexico								
1972-73	.55**	.03	.48**	-.09	.31*	22.2	67.2	10.6
1973-74	.65**	-.09	.36**	-.09	.23	20.3	68.7	10.9
1974-75	.85**	-.30*	.49**	-.04	.36**	19.5	70.0	10.5
1975-76	.82**	-.45**	.37**	-.13	.18	17.2	71.1	11.7
1976-77	.78**	-.38**	.33**	-.04	.21	16.6	72.6	10.8
Texas								
1974-75	.69**	-.32**	.63**	-.17**	.61**	47.9	45.3	6.8
1975-76	.61**	-.43**	.54**	-.17**	.50**	44.9	47.9	7.2

Significance: * = less than .01
** = less than .001

the relative share of state aid, except in Michigan and Florida. In New Mexico, two-thirds of all revenue for education came from state aid before the reform and three years after the reform this had increased to almost three-fourths. Coupled with the limits set on local spending in New Mexico under the reform, the relatively large state share in funding education may account for the state's success in almost eliminating wealth-discrimination in funding education.

Post-Reform Wealth Discrimination

That large correlations between district wealth and spending persist following the reforms in five of the six states studied is evident from the above results. These wealth-related inequalities are graphically displayed in the scatter plots in Figures 1-7. The market value of taxable property per pupil (x-axis) is plotted against the local plus state revenue per pupil (y-axis) for each district in the state. Thus, each district is represented by a point plotted on the X-Y coordinates. The pattern of the relationship between property wealth and spending level is described by a regression line, the line of best fit for the scatter of points, which in most cases is a straight line. A line with a positive slope indicates that as wealth increases, the amount of revenue available for education from local and state sources combined increases. The higher the r^2, the greater the ability to predict revenue level from knowledge of the wealth of a district; the steeper the slope of the line, the more severe the revenue disparities per unit of wealth. Thus, for example, we can see

FIGURE 1

CALIFORNIA UNIFIED DISTRICTS:
LOCAL + STATE REVENUE PER PUPIL WITH PROPERTY WEALTH PER PUPIL, 1975-76

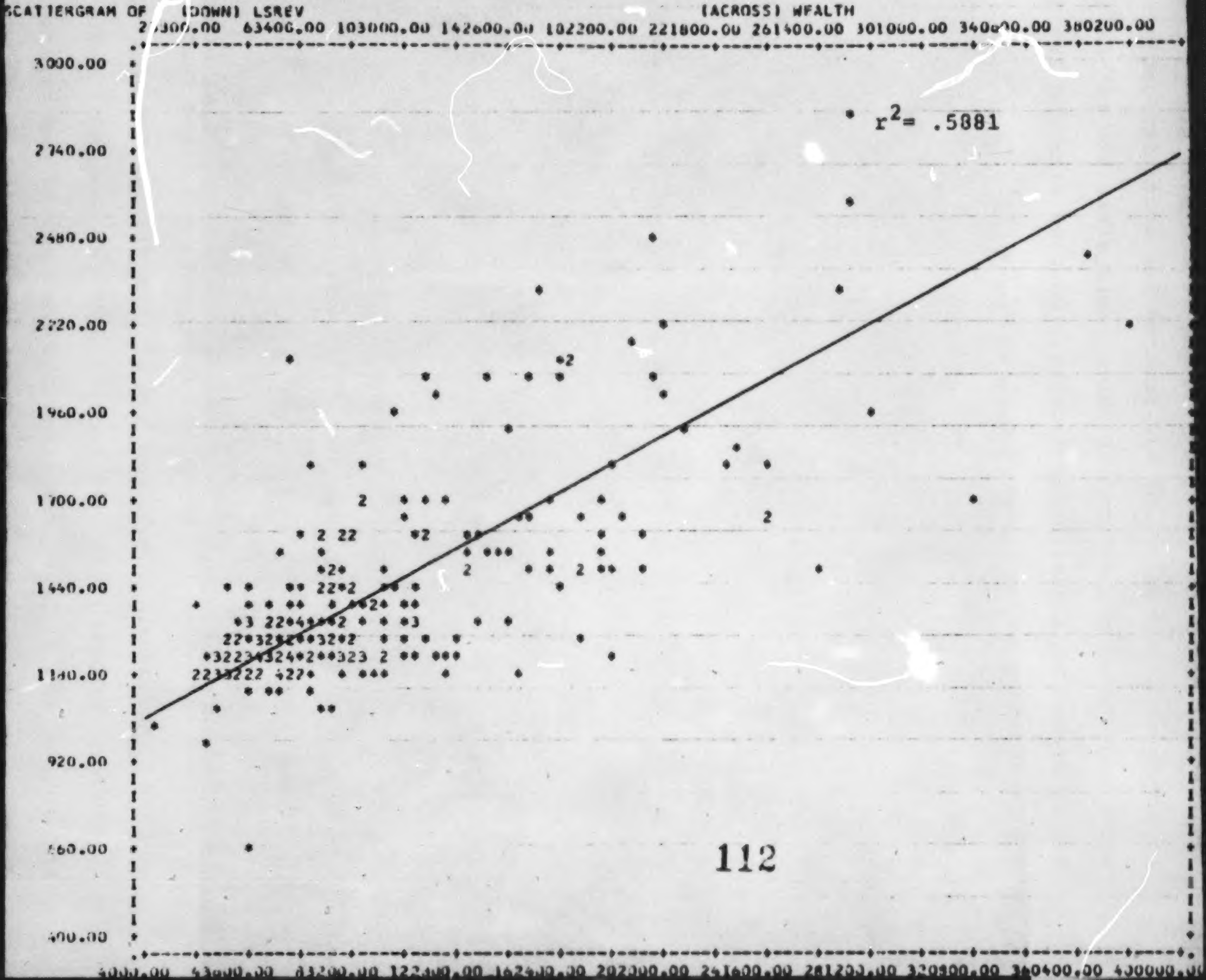
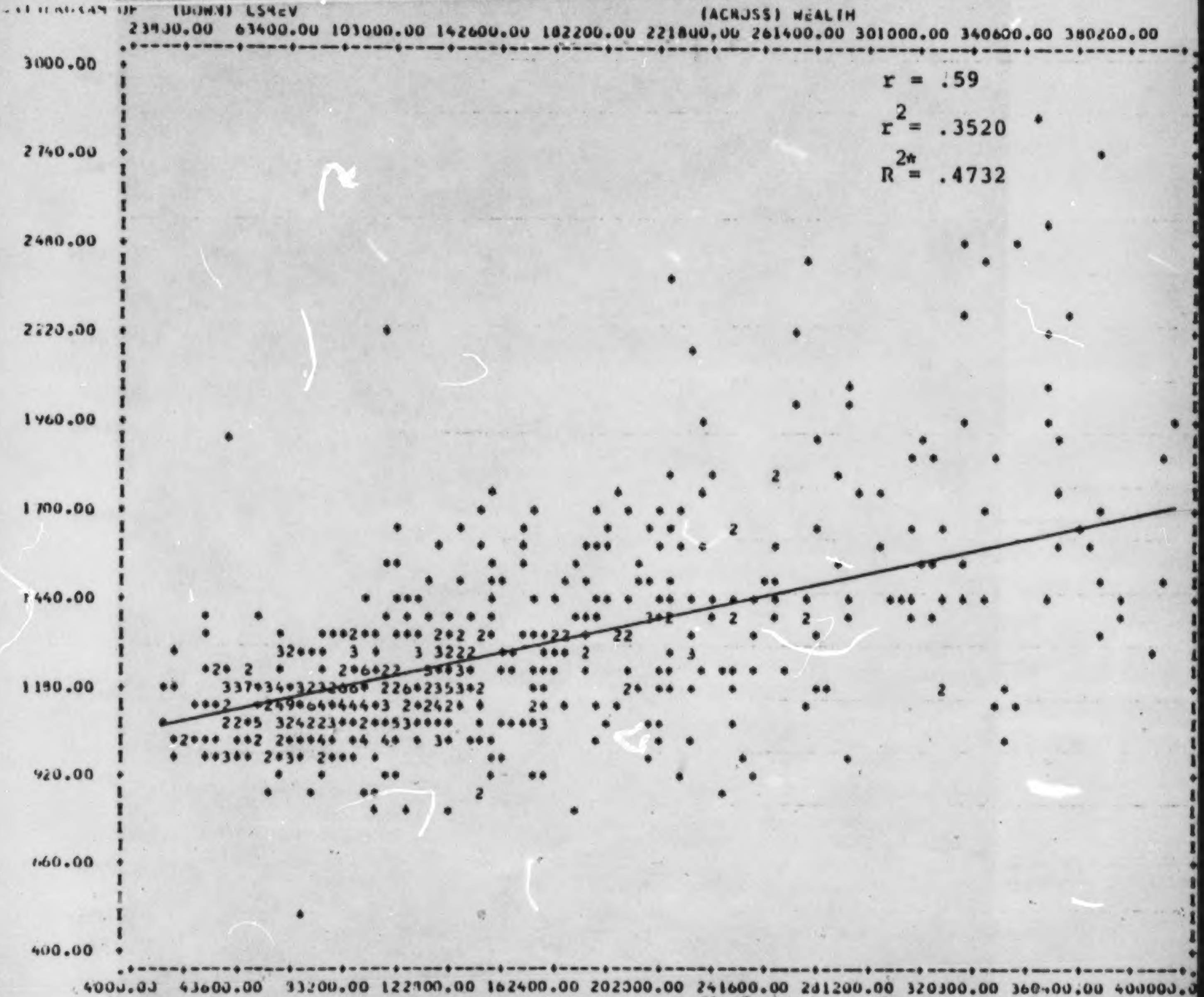


FIGURE 2

CALIFORNIA ELEMENTARY DISTRICTS: LOCAL + STATE REVENUE PER PUPIL WITH PROPERTY WEALTH PER PUPIL, 1975-76

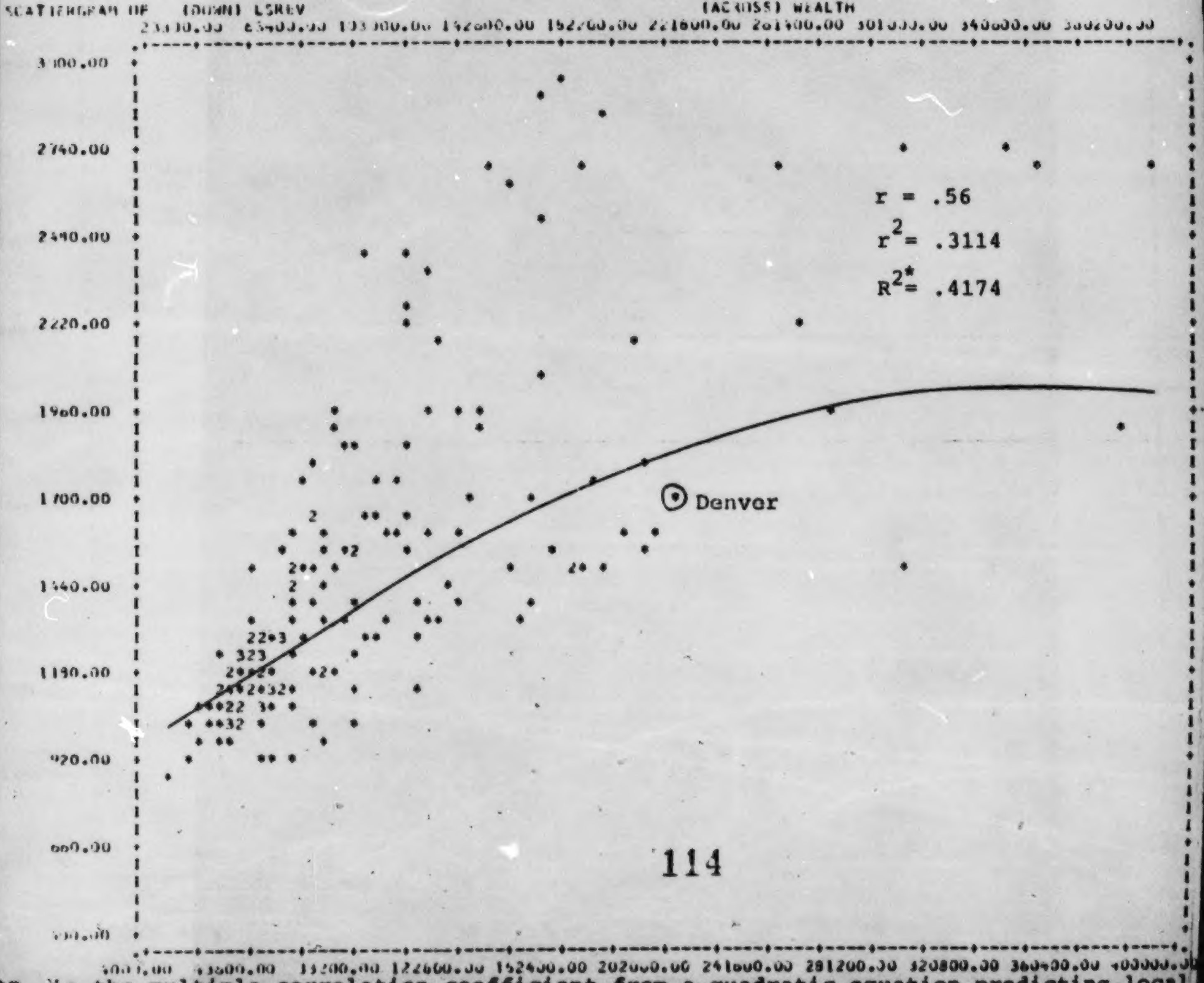


*R^2 is the multiple correlation coefficient (squared) from a quadratic equation predict
local plus state revenue per pupil.

FIGURE 3

COLORADO SCHOOL DISTRICTS:

LOCAL + STATE REVENUE PER PUPIL WITH PROPERTY WEALTH PER PUPIL, 1975-76



*R^2 is the multiple correlation coefficient from a quadratic equation predicting local

FIGURE 4

FLORIDA SCHOOL DISTRICTS: LOCAL+STATE REVENUE PER PUPIL WITH EQUALIZED PROPERTY WEALTH PER PUPIL, 1975-76

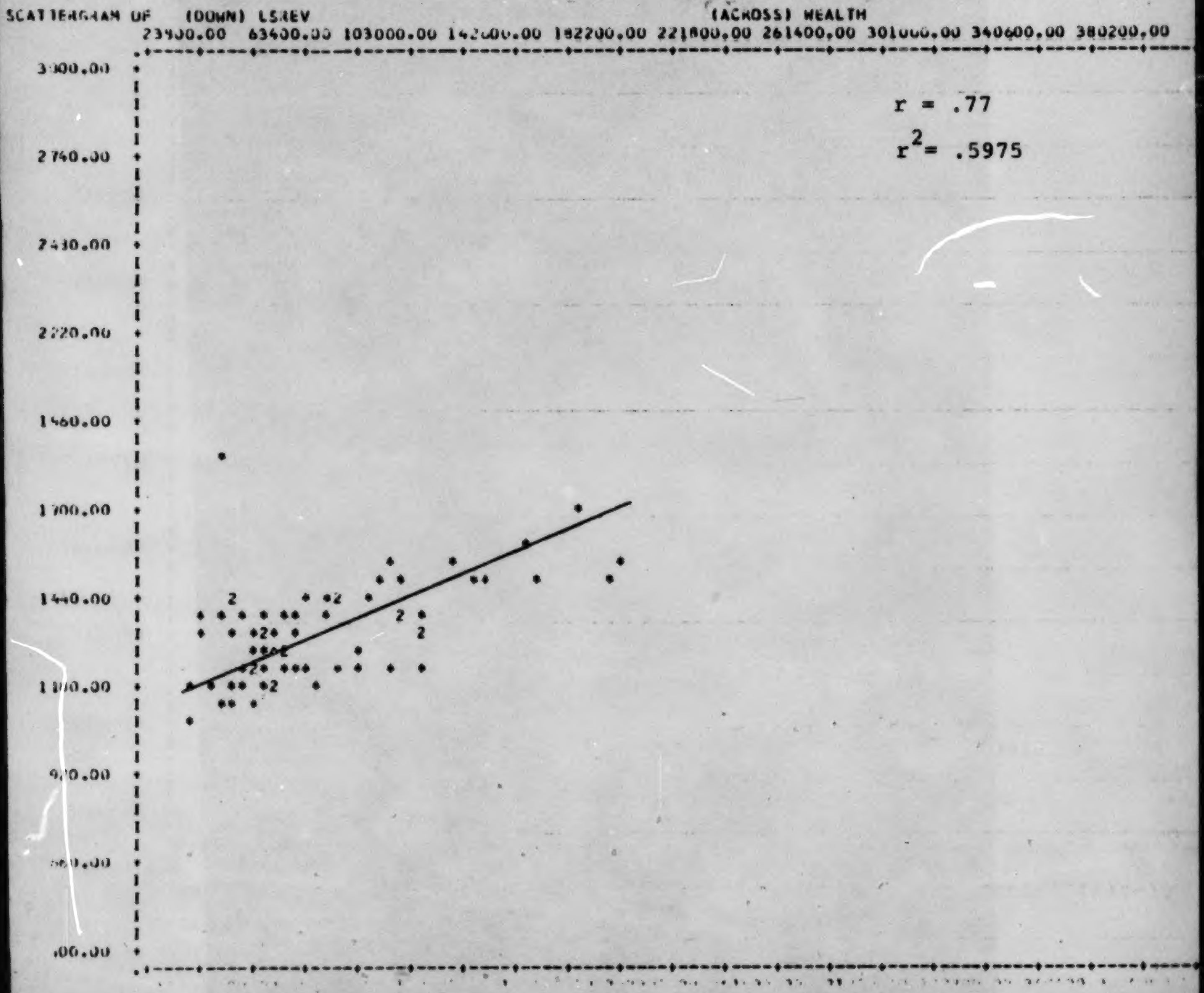


FIGURE 5

MICHIGAN SCHOOL DISTRICTS:
LOCAL + STATE REVENUE PER PUPIL WITH PROPERTY WEALTH PER PUPIL, 1974-75

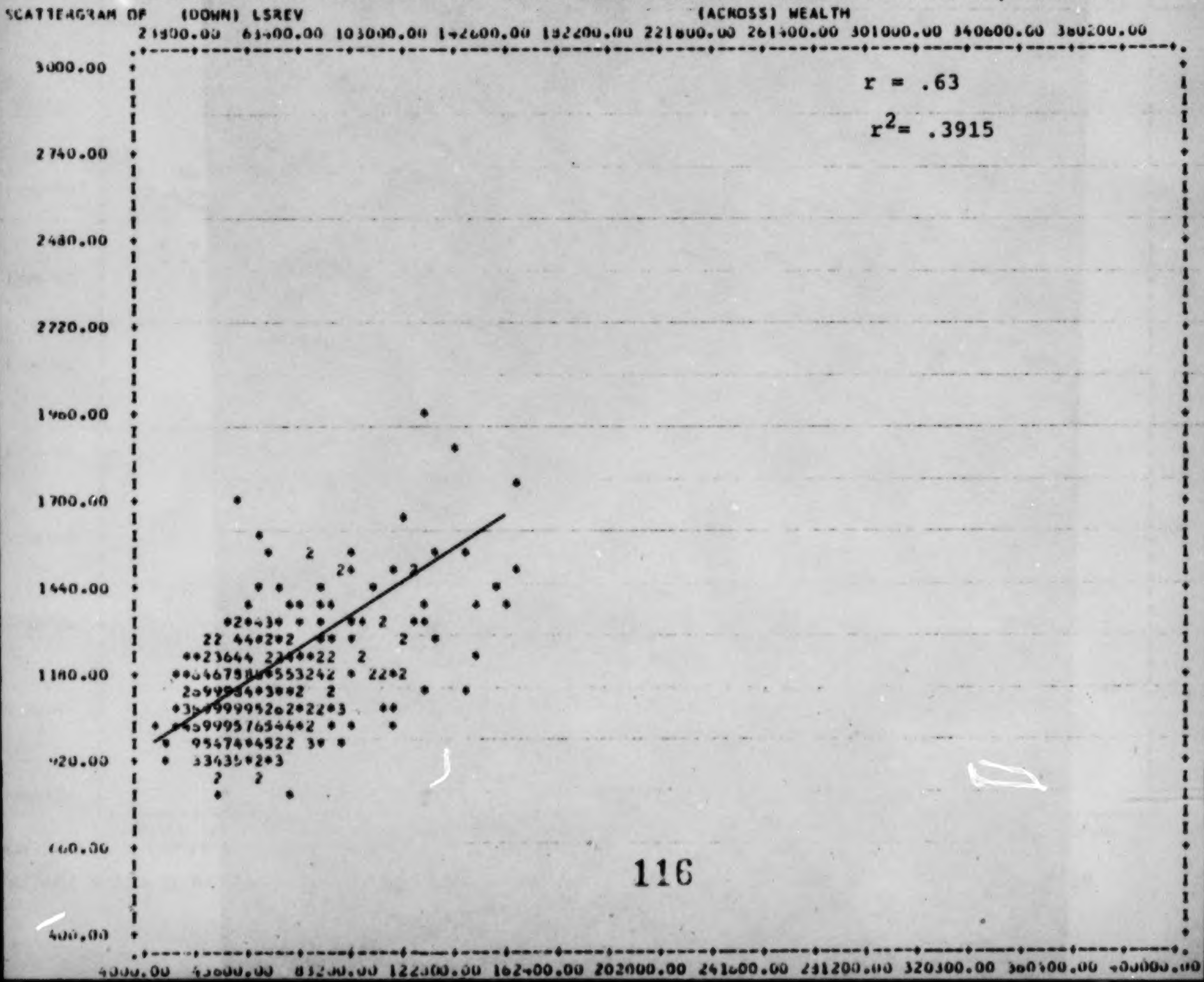


FIGURE 6

NEW MEXICO SCHOOL DISTRICTS:

LOCAL + STATE REVENUE PER PUPIL WITH PROPERTY WEALTH PER PUPIL, 1975-76

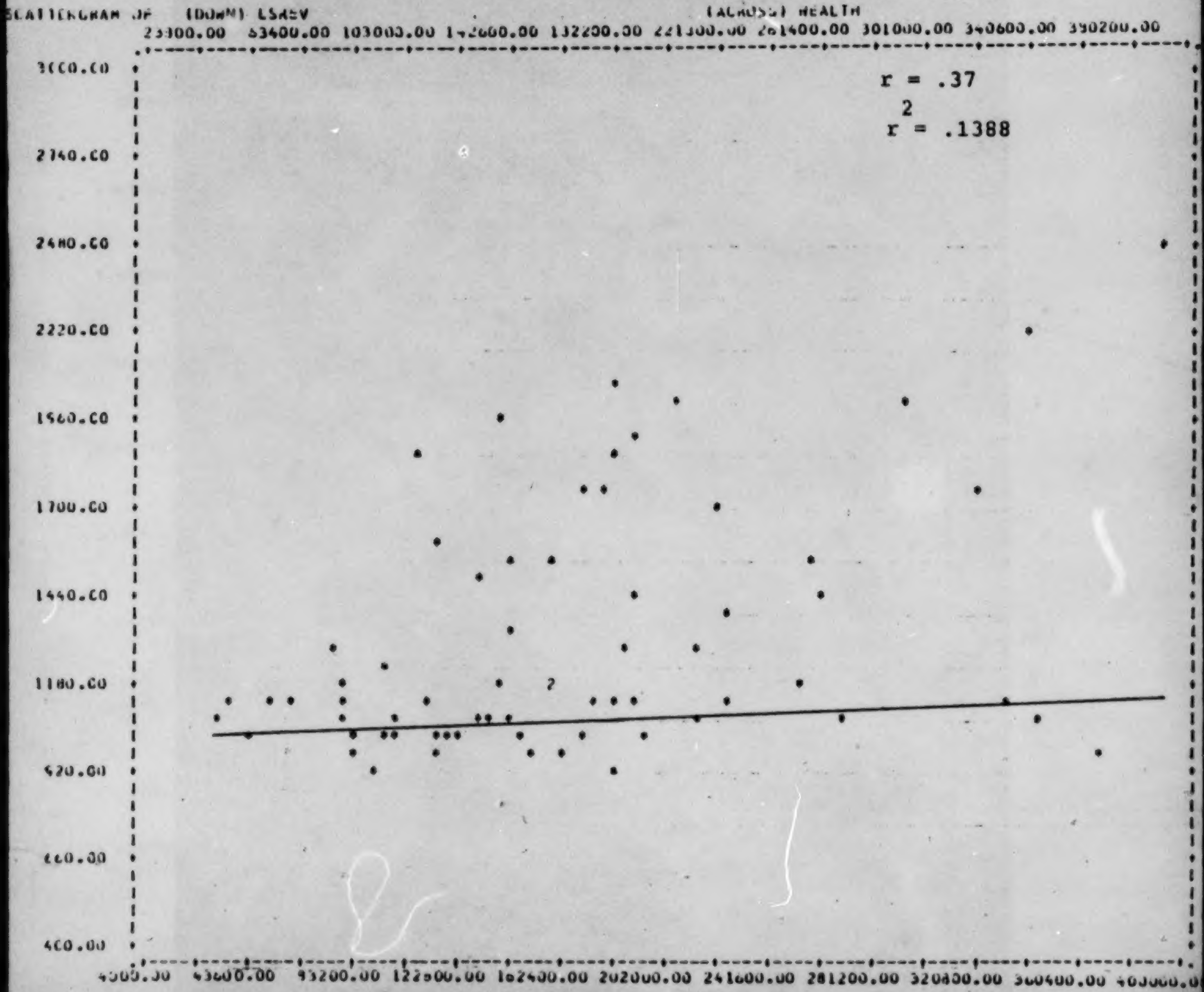
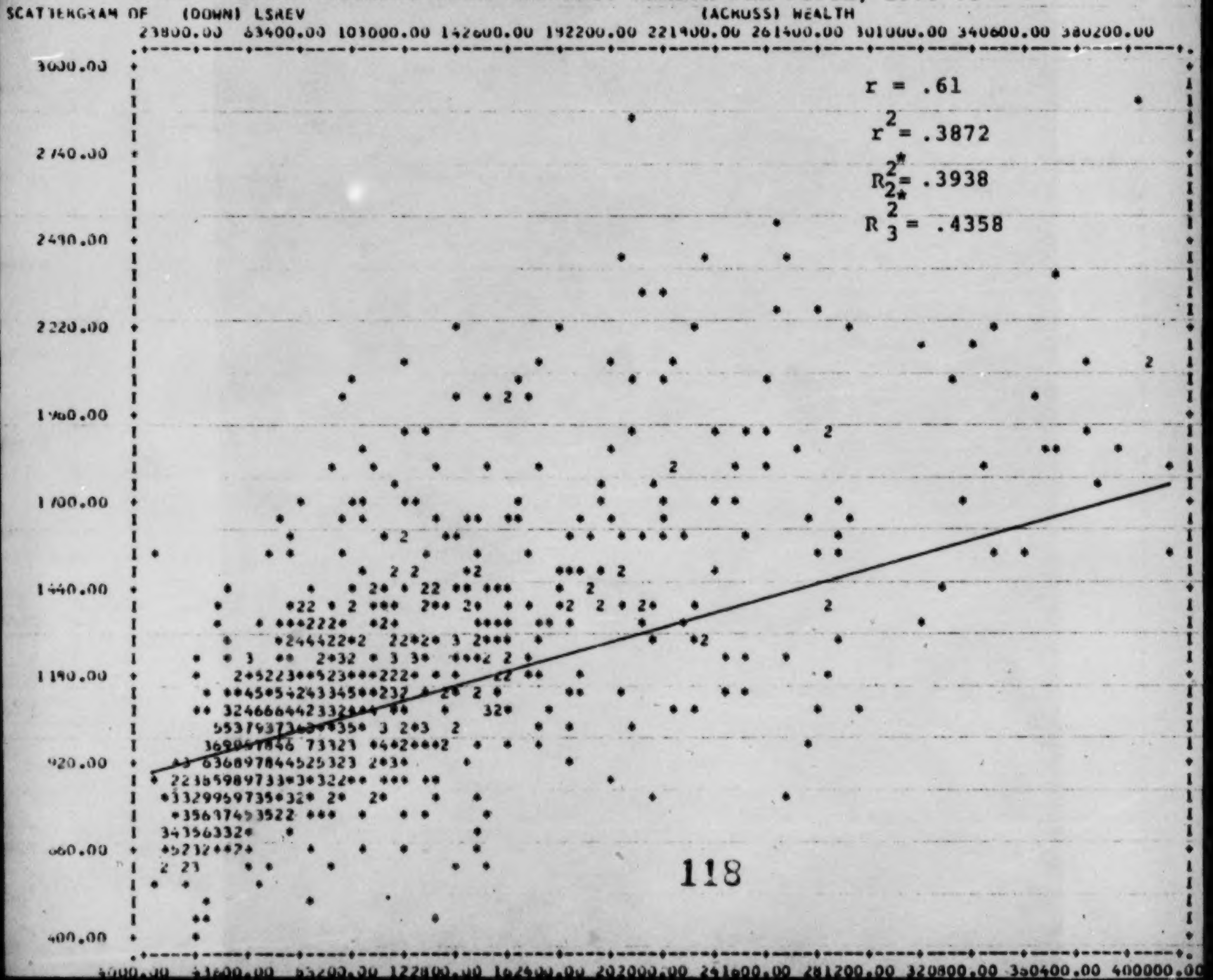


FIGURE 7

TEXAS SCHOOL DISTRICTS:

LOCAL + STATE REVENUE WITH PROPERTY WEALTH PER PUPIL, 1975-76



from the r^2's that revenue level can be predicted more accurately among California unified districts knowing district wealth (Figure 1) than among California elementary districts (Figure 2). But from the slopes of the regression lines, we can see that the amount of revenue disparity is greater per unit of wealth among unified districts than it is among elementary districts.

In Colorado (Figure 3), the relationship between property wealth and local plus state revenue is best described by a slightly curved line. The line is bent in Colorado because of the strong influence of Denver school district. The regressions were weighted by the relative size of the school districts and, hence, larger districts are more likely to influence the shape of the regression line than smaller districts. If Denver were excluded from the analysis, the slope of the regression line would be considerably steeper and wealth-related disparities even more severe.

In Florida (Figure 4), a clear linear pattern is found in the relationship between district property wealth and revenue level. Sixty percent of the variation in revenues from local and state sources is explained by local property wealth. While property wealth has greater predictive ability in Florida than in any of the other states in our study, the degree of revenue disparity associated with a given amount of district wealth is not as great nor is the variation in property wealth as large as in some states.

Even less variation in district wealth is found among school districts in Michigan. But, as can be seen in Figure 5, there is a clear linear association between revenue level and property wealth. Some 39 percent of the variation in local plus state revenue can be accounted for by its association with property wealth.

New Mexico districts are more randomly distributed on the scatter plot between wealth and revenue than any of the other states studied, as can be seen in Figure 6. Only 14 percent of the variation in revenues can be accounted for by district wealth. Furthermore, the slope of the regression line which best describes the pattern of the relationship between district wealth and revenue level is very slight, indicating that very little increase in revenue is associated with a unit increase in property wealth.

The relationship between property wealth and revenues available for education in Texas is shown in Figure 7. Wide variation is found in property wealth as well as in revenues. (In fact, given the wide disparity in these two variables, some districts did not fit within the range chosen for the coordinates.) Some 44 percent of the variation in revenues can be explained by property wealth with a slight curvelinear regression line.

In sum, we found that the goal of fiscal neutrality -- whether measured in terms of simple neutrality or conditional neutrality -- was not achieved as a result of the reforms in any of the six states included in our study. Although some slight improvement was made in each of the states, spending disparities continue to be related to district wealth in all six states. These disparities are sizeable in all of the states with the exception of New Mexico.

An understanding of wealth-related inequalities in revenues available for education brings us closer to our main concern in this research, the extent to which spending inequalities are related to ethnicity or family income of students. But first we must identify the degree of ethnic and poverty group isolation in each state. If ethnic and income groups are found to be evenly distributed throughout school districts in the state, then no inequalities in funding will be found among these groups. On the other hand, if there is a high degree of ethnic or poverty isolation, there exists the potential for disparities in funding among groups.

RQ 3: Ethnic and Poverty Group Isolation

The amount of ethnic isolation may be operationalized in two ways: (1) the extent to which ethnic minority and poverty pupils are concentrated in a few districts or widely distributed among many districts in the state, and (2) the extent to which such pupils are isolated in districts of high proportions of their own group. To some extent, the amount of ethnic isolation will be determined by the relative size of the ethnic (or income) group in the state. Table 6 shows the percent of each ethnic (and poor) group enrolled for the entire state and by community type. Blacks constitute more than 10 percent of the statewide student enrollments in California unified districts, Florida, Michigan and Texas; they are fewer than 3 percent of the state's enrollment in California elementary districts and New Mexico. Students of Spanish heritage are a substantial proportion of the total enrollments in the Southwestern states of California, Colorado, New Mexico and Texas. Indeed, one of the criteria for selecting these states

TABLE 6

MEAN PERCENT ETHNIC GROUP ENROLLMENT BY COMMUNITY TYPE 1975-76

	Percent Anglo	Percent Black	Percent Spanish	Percent Indian	Percent Asian	Percent Poor	All Pupils
California Unified	65.5	12.9	17.7	0.4	3.3	12.2	100
Urban	65.0	13.3	17.7	0.3	3.4	11.9	96
Rural	76.8	0.8	18.5	2.7	1.0	12.4	4
California Elem.	76.0	3.0	17.8	0.6	2.3	10.8	100
Urban	75.5	3.4	17.6	0.4	2.8	9.1	71
Rural	77.1	2.1	18.2	1.2	1.2	15.1	29
Colorado	79.9	4.1	14.6	0.8	0.5	12.6	100
Cent. City	59.9	13.2	25.6	0.5	0.9	18.8	25
Suburban	89.1	1.9	7.6	0.3	1.1	6.3	46
Non-Metro.	82.0	0.2	16.5	0.8	0.4	17.5	29
Florida	70.2	22.2	6.8	*	*	18.1	100
Cent. City	67.9	23.5	7.9			17.1	44
Other Metro	86.6	12.0	.7			21.3	7
Non-Metro 25-50	73.1	22.3	3.6			24.0	3
Non-Metro 10-25	77.3	19.2	2.7			22.7	7
Non-Metro LT 10	71.1	26.7	1.6			32.7	9
Michigan	83.7	14.3	1.5	.3	.2	9.5	100
Cent. City	42.3	57.7	*	*	*	16.3	29
City of 10,000+	90.4	9.6				7.1	8
Town (2,500-10,000)	96.9	3.1				7.7	15
Urban Fringe	96.2	3.8				4.7	38
Rural	96.6	3.4				10.7	10
New Mexico	48.2	2.4	41.5	7.9	*	26.7	100
Cent. City	56.0	3.0	39.0	2.0		19.4	30
City 10-50,000	54.9	3.6	32.2	9.3		25.0	36
City 1,000-10,000	36.9	0.6	55.9	6.6		32.6	29
Rural	18.5	0.2	36.4	44.9		52.4	5
Texas	60.9	15.2	23.9	*	*	21.4	100
Cent. City	43.7	25.6	30.2			23.2	35
Suburban	76.3	6.9	16.2			10.6	29
City	59.8	12.0	27.9			28.2	26
Small Town/Rural	71.4	10.7	17.7			30.3	10

*Not separated out in the analyses since they constitute less than 1.0 percent of the total.

was to get a substantial representation of the Mexican American population. Students of Spanish-heritage are of relatively insignificant numbers (less than 2 percent) in Michigan and Florida. Only in California do Asian pupils constitute more than one percent of the total state enrollment. Similarly, New Mexico was the only state in which Native Americans constitute more than one percent of the state's enrollment; they comprise 8 percent of all students in that state.

Distributions of ethnic groups by community types reveal some striking differences in some of the states. Blacks are generally concentrated more in central cities than in other community types. The contrast is particularly sharp in Michigan where 58 percent of the students in central city schools are Black, while Blacks constitute less than 10 percent of the students in any other type of community locale. Likewise, in Texas, Colorado, and California unified districts, Blacks comprise a much larger proportion of the student enrollment in central city districts than in districts of other locales. In Florida, on the other hand, Blacks constitute about one-fourth of the pupils in county districts with central cities as well as in county districts which were predominately rural (with cities of less than 10,000 population).

Students of Spanish heritage were found to be represented proportionately as much outside central cities as inside them in California, New Mexico and Texas, although substantial proportions of Spanish-heritage pupils were found in large central city districts in all of the Southwestern states. In Florida, approximately 74 percent of the Spanish-background pupils, mostly of Cuban descent, were found in one district, Dade County.

Students from families with incomes below the official federal poverty line were found generally in greater proportions in rural than in urbanized areas in all six states, which is not to say that most of the poverty pupils were located in rural areas. Indeed, only a small percentage of all students in any of the states could be classified as rural. Indian students in New Mexico are an exception to this pattern of residence; most of the Native American students in that state are located in rural areas.

These ethnic group distributions could have an important influence on the analyses which follow. If an ethnic group constitutes a very small proportion of the total student enrollment in a state and that group is not substantially isolated in districts where they make up a sizeable proportion of the total enrollment, the group cannot be analyzed separately with district-level data. With district-level data we would be risking the ecological falacy of attributing results which are derived from area (district) data to individual ethnic groups within those districts whose members constitute only a small proportion of the district population. With only district-level data, it would be risky to attempt to interpret results on Asian students in all states, Indian students in all states except New Mexico, Spanish-heritage students in Michigan, and Black students in New Mexico and California elementary districts. To avoid the ecological falacy, ethnic groups were not included in our analyses of those states where they constituted less than two percent of the state's enrollment.

A clearer picture of ethnic isolation is shown in Table 7. The last column addresses the first part of our research question concerning ethnic isolation by identifying the number of districts in which the majority of members of each ethnic group in a state can be found. This indicates whether or not members of a particular ethnic group are concentrated in only a few districts, regardless of their proportion of the total district enrollment. It can be seen that a majority of all Black pupils in Michigan[7] and Colorado and of Spanish-background students in Florida are located in a single district in their respective states. Similarly, a majority of Blacks in New Mexico and California unified districts are located in only two school districts. The majority of Asian students are concentrated in three unified districts in California.

The extent to which an ethnic or poverty group is concentrated in districts where they constitute a substantial proportion of their own group is shown in the first two columns of Table 7. Groups which are highly isolated include Blacks in Michigan and Chicanos in Texas and New Mexico, where 71 percent, 60 percent and 46 percent of the members of these respective groups are concentrated in districts where they constitute more than half of the district enrollment. In California elementary districts, Chicano pupils are isolated substantially also; almost one-fourth of them are in

TABLE 7

ETHNIC ISOLATION OF ETHNIC AND INCOME GROUPS BY SCHOOL DISTRICT BOUNDARIES IN SIX STATES

	% Of Group In Districts Where they are:		
Ethnic or Income Group by State	50%+ of enrollment	30%+ of enrollment	Number of Districts In Which 51% of All Group Members Are Concentrated
California Unified (1973-74)			(253)*
Anglos	79.8	97.8	24
Blacks	18.3	30.7	2
Chicanos	10.1	27.6	10
Indians	0	8.7	21
Asians	0	0	3
Poor	0	1.6	9
California Elementary (1973-74)			(680)
Anglos	94.0	99.5	51
Blacks	16.1	18.2	14
Chicanos	23.0	53.9	35
Indians	.1	1.7	40
Asians	.1	.8	24
Poor	.4	7.0	60
Colorado (1975-76)			(181)
Anglos	98.9	99.9	8
Blacks	0	0	6
Chicanos	9.1	29.3	4
Indians	0	15.8	5
Asians	0	0	9
Poor	3.8	11.3	
Florida (1975-76)			(67)
Anglos			
Blacks	3	26	5
Spanish Lang.	0	1	1
Poor	0	24	8
Michigan (1974-75)			(529)
Anglos	94.1	99.9	70
Minority	71.1	80.1	1
Poor	0	.5	23
New Mexico (1975-76)			(88)
Anglos	76.4	93.6	5
Chicanos	45.8	89.8	5
Indians	64.5	76.4	2
Poor	3.1	20.6	5
Texas			(1090)
Anglos	82	96	43
Blacks	10	67	7
Chicanos	60	69	18
Poor	17	42	42

*Total number of districts in the state as a whole is in parentheses.

districts where they comprise a majority of the student enrollment. Native Americans are highly isolated in New Mexico; 64 percent of all Indian pupils are located in districts where they are more than 50 percent of the total student enrollment. It is in these states where interethnic differences in school finance measures can more clearly be drawn.

Having investigated the extent of ethnic isolation among districts within each of the states, we are now ready to answer the central question in our study concerning the distribution of educational revenues among ethnic and income groups.

RQ 4: Statewide Average Revenues by Ethnic (Income) Group

Research Question 4 is concerned with the extent to which there are differences in revenues available for education among ethnic (and income) groups on the average statewide. Table 8 presents the statewide average local plus state revenue per pupil for each ethnic group by year in each of the states. The results of a oneway analysis of variance testing the significance of difference among ethnic and poor-nonpoor group means are shown in asterisks above each group of means. Table 9 presents the ratio of each of these same ethnic group means to the state mean for all students. Thus, if a ratio in Table 9 is below 1.00, the ethnic (income) group average is below the state average for all pupils and if a ratio is above 1.00, the ethnic (income) group average is above the state average for all students. These two tables should be examined conjointly, since Table 8 provides the actual dollar amounts per pupil and the significance tests and Table 9 adds the

TABLE 8

MEAN LOCAL + STATE REVENUE PER PUPIL FOR ETHNIC AND INCOME GROUPS IN SIX STATES: 1972-73 TO 1975-76

Ethnic & Income Groups By State	Local + State Revenue Per Pupil by Year				
	1972-73	1973-74	1974-75	1975-76	1976-77
Calif. Unified Avg.	$ 1,006	$ 1,131	$ 1,208	$ 1,354	
Significance	**	*	*		
Black	1,085	1,199	1,277	1,425	
Anglo	987	1,116	1,193	1,340	
Chicano	995	1,112	1,193	1,334	
Significance					
Poor	1,016	1,139	1,217	1,359	
Non-Poor	1,005	1,130	1,206	1,353	
Calif. Elem. Avg.	$ 842	$ 998	$ 1,074	$ 1,212	
Significance					
Black	858	1,040	1,104	1,254	
Anglo	848	999	1,083	1,213	
Chicano	812	983	1,060	1,201	
Significance					
Poor	805	975	1,054	1,199	
Non-Poor	846	1,001	1,077	1,212	
Colorado Average		$ 1,008	$ 1,139	$ 1,316	
Significance				*	
Black		1,126	1,288	1,552	
Anglo		1,007	1,135	1,302	
Chicano		996	1,141	1,330	
Significance					
Poor		1,018	1,171	1,356	
Non-Poor		1,006	1,135	1,310	
Florida Average	$ 954	$ 1,187	$ 1,344	$ 1,375	
Significance					
Black	957	1,188	1,342	1,375	
Anglo	949	1,177	1,336	1,363	
Spanish Lang.	1,006	1,294	1,435	1,502	
Significance					
Poor	949	1,176	1,333	1,358	
Non-Poor	955	1,190	1,346	1,379	
Michigan Average	$ 946	$ 1,077	$ 1,186		
Significance	*	**	**		
Minority	909	1,114	1,220		
Non-Minority	953	1,069	1,180		
Significance					
Poor	915	1,071	1,177		
Non-Poor	946	1,077	1,187		
New Mexico Average	$ 782	$ 841	$ 949	$ 1,070	$ 1,218
Significance	***				
Anglo	767	838	948	1,072	1,227
Chicano	767	825	940	1,065	1,206
Indian	962	954	1,006	1,091	1,236
Significance					
Poor	801	861	956	1,083	1,227
Non-Poor	766	821	931	1,051	1,195
Texas Average			$ 1,030	$ 1,232	
Significance			***	***	
Black			1,024	1,253	
Anglo			1,099	1,260	
Chicano			933	1,150	
Significance			***	**	
Poor			922	1,184	
Non-Poor			1,036	1,235	

Significance: * = between .05 and .01
** = between .01 and .001
*** = less than .001

TABLE 9

DISPARITY RATIOS OF LOCAL + STATE REVENUE PER PUPIL FOR ETHNIC AND POVERTY GROUPS IN SIX STATES BY YEAR

	Ratios of Means in Local + State Revenue Per Pupil				
Year by State	Black/State	Hispanic/State	Anglo/State	Indian/State	Poor/State
California Unified					
1972-73	1.08	0.98	0.98		1.01
1973-74	1.08	0.98	0.99		1.01
1974-75	1.06	0.99	0.99		1.01
1975-76	1.05	0.99	0.99		1.00
California Elementary					
1972-73	1.02	0.96	0.96		.96
1973-74	1.04	0.98	1.00		.98
1974-75	1.02	0.98	1.00		.98
1975-76	1.03	0.99	1.00		.99
Colorado					
1973-74	1.12	0.99	1.00		1.01
1974-75	1.13	1.00	1.00		1.03
1975-76	1.18	1.01	0.99		1.03
Florida					
1972-73	1.00	1.05	0.99		0.99
1973-74	1.00	1.09	0.99		0.99
1974-75	1.00	1.07	0.99		0.99
1975-76	1.00	1.09	0.99		0.99
Michigan					
1969-70	1.03		0.99		0.99
1970-71	1.01		1.00		0.98
1971-72	1.02		1.00		0.99
1972-73	0.96		1.01		1.08
1973-74	1.03		0.99		0.99
1974-75	1.03		0.99		0.99
New Mexico					
1972-73		0.98	0.98	1.23	1.02
1973-74		0.98	1.00	1.13	1.02
1974-75		0.99	1.00	1.06	1.01
1975-76		1.00	1.00	1.02	1.01
1976-77		0.99	1.01	1.01	1.01
Texas					
1974-75	0.99	0.91	1.07		0.90
1975-76	1.02	0.93	1.02		0.96

relative position of each group compared to the state average. The caveat given in the previous section concerning the difficulty of identifying ethnic group differences if there is not much ethnic isolation among school districts applies particularly in these analyses. Indeed, few of the differences among ethnic group means were large enough to be statistically significant. Only in Michigan and Texas - both states with extreme ethnic isolation - were ethnic group differences large enough to be significant in each year. In Michigan, minority students were in districts with less revenues for education before the reform, but were receiving more revenues than white pupils after the reform. This change, upon closer examination of revenue by sources, was due not so much to increased state aid as to restoration of a local tax levy which Detroit voters failed to pass in the year prior to the reform legislation, a year when the Detroit schools faced a severe financial crisis. State legislation, however, provided some relief for Detroit, but it was the voted local millage which returned Detroit schools to their normal level of operating.

Chicano students in Texas were at a decided disadvantage compared to Anglos and Blacks both before and after the reform; but the relative position improved somewhat as a result of the reform. Black students gained both in absolute dollars and relative to Anglos following the reform.

Black students in California unified districts were receiving significantly more revenues than either Anglo or Chicano students in the year prior to reform, but within three years after the reform, they had lost their relative advantage to some extent.

Indian students in New Mexico were receiving significantly more dollars per pupil for education two years before the reform and gradually lost their relative advantage each year thereafter. This change, however, does not seem to be a direct result of the changes in state aid under the reform law for two reasons. First, the change begins to occur in the year prior to reform. Secondly, the greater aid to Indian students is due primarily to federal impact aid funds which are counted as local revenues.

One final trend that should be noted from the figures in Tables 8 and 9 is the improvement of the relative advantage of Blacks in Colorado school districts. This advantage becomes statistically significant in the second year following the reform. Since most Blacks in Colorado are located in Denver school district, this improvement largely reflects the fact that Denver benefitted from the reform in Colorado.

Changes in the relative position of students from poor families follow rather closely the changes in the relative position of the largest minority group in the state. The differences and changes in those differences are not as dramatic as the changes in the relative positions of ethnic groups, with the exception of Texas where poverty children improved somewhat their marked disadvantage with respect to non-poverty pupils.

While the analysis of statewide mean revenues for ethnic and income groups has provided an overview of the relative position of each group in the state as a whole, state averages do not reveal inequalities among subgroups of districts within the state. In the section which follows, the range of districts of different percentages of ethnic group enrollment will be examined in relation to the amount of revenue available for education.

RQs 5 & 6: Revenues by District Ethnic and Poverty Concentration

Research Question 5 addresses the relationship between the amount of revenue available for education and the ethnic (or poverty) concentration of school districts. Research Question 6 examines the changes which have occurred in this relationship over time from before to after passage of reform legislation. "Ethnic (poverty) concentration" refers to the percentage a particular ethnic (or income) group constitutes of the total district enrollment. The extent of ethnic concentration in each of the states was indicated above in Tables 6 and 7.

Table 10 shows the extent to which there is a consistent linear relationship between percent ethnic (poor) enrolled and local plus state revenue per pupil for each of the six states over time. The Pearson correlation coefficient (r) indicates the relative strength or consistency of a direct (+) or inverse (-) linear relationship and the regression coefficient (b) shows how much of a change in dollars per pupil on the average is associated with each one percent change in the ethnic group's concentration.

The predominant pattern seems to be that local plus state revenue is directly related to percent Black and inversely related to percent Mexican American enrollment, with considerable differences

TABLE 10

THE RELATIONSHIP BETWEEN LOCAL + STATE REVENUE PER PUPIL AND PERCENT BLACK, SPANISH, AND POOR STUDENTS ENROLLED IN SIX STATES AS INDICATED BY PEARSON CORRELATIONS AND REGRESSION COEFFICIENTS

State	Local + State Revenue Per Pupil Correlated with:					
	Percent Black		Pct. Span. Surn.		Pct. Poor	
	r	b	r	b	r	b
Calif. Unified						
1972-73	.35**	4.11	-.09	-1.31	.11	3.60
1973-74	.30**	3.59	-.15	-2.16	.08	2.82
1974-75	.32**	3.61	-.12	-1.70	.11	3.30
1975-76	.28**	3.72	-.14	-2.26	.04	1.59
Calif. Elemen.						
1972-73	.03	.90	-.16**	-1.88	-.34**	-8.69
1973-74	.09*	2.38	-.08	- .90	-.25**	-5.95
1974-75	.05	1.41	-.11*	-1.21	-.22**	-5.16
1975-76	.08	2.47	-.06	- .69	-.15**	-3.65
Colorado						
1973-74	.39**	11.44	-.08	-1.15	.11	2.12
1974-75	.46**	14.02	-.003	- .05	.23**	5.07
1975-76	.58**	21.31	.06	1.05	.22*	5.96
Florida						
1972-73	.09	.83	.32**	2.35	-.18	-2.43
1973-74	.01	.10	.52**	6.28	-.27	-5.52
1974-75	-.04	-.45	.48**	5.20	-.30*	-5.45
1975-76	.003	.05	.58**	7.46	-.39**	-8.26
Michigan						
1969-70	.14**	.64			-.07	-1.31
1970-71	.04	.19			-.15**	-2.83
1971-72	.07	.39			-.13*	-2.01
1972-73	-.16**	-.97			-.31**	-7.14
1973-74	.16**	.94			-.07	-1.58
1974-75	.14**	.85			-.09	-2.38
New Mexico	Percent Indian					
1972-73	.63**	4.11	-.24	-1.36	.52**	5.04
1973-74	.32**	2.58	-.02	- .14	.51**	6.26
1974-75	.15	1.26	.00	.00	.31**	4.03
1975-76	.06	.48	.03	.21	.43**	5.12
1976-77	.05	.43	.12	1.00	.44**	6.30
Texas						
1974-75	.04	.67	-.35**	-3.29	-.34**	-5.67
1975-76	.07	1.09	-.27**	-2.81	-.25**	-4.43

Significance levels: * = .01 to .001; ** = less than .001.
Note: Dashed line indicates when the state reform was passed.

among states in the strength of the relationship. The pattern of relationship between revenue level and percent poor is a mixed one.

More specifically, there is a moderate direct relationship between percent Black enrollment and the amount of local plus state revenue for education among California unified districts and in Colorado. The trend since the reform, however, is toward a decreasing relationship in California unified districts and an increase in Colorado. The positive correlation with percent Black in Colorado can be accounted for by the fact that Denver school district, where most Black pupils are located, benefitted from the reform in Colorado. The pattern of this relationship in Michigan is influenced in a similar manner by changes in revenue available for education in Detroit schools; the relationship between percent Black and local plus state revenue becomes inverse in the year prior to the reform law and direct again in the year following the reform. As stated earlier, this change can be explained by the failure of Detroit to vote needed local revenues in the year just prior to the reform. In Florida and Texas, the relationship between revenue per pupil and percent Black enrollment was not significantly different from zero for any of the years studied. But, as will be demonstrated below, this simply indicates that no linear relationship is found on the district level of analysis. Further examination of these relationships indicate that in Florida there is a curvelinear relationship between percent Black and local plus state revenue per pupil.

Districts with moderate percentages of Black pupils enrolled were found to be relatively property-wealthy large urban districts with better than average revenues per pupil and districts with both high and low percent Black enrollments were found to have relatively fewer dollars available per pupil for education from local and state sources.

Hispanic pupils consist of two different ethnic groups in our sample -- those of Mexican descent in the Southwestern states and those of Cuban descent in Florida. Since the groups differ in origin and on socioeconomic background indicators, they should not be lumped together in interpreting the results of our analyses.

The relative disadvantage of Chicano pupils in regard to revenue available is most apparent in Texas. While some improvement occurs following the reform, the disadvantage is still sizeable. In California elementary districts, a significant disadvantage in revenues for pupils in districts with greater proportions of Chicano pupils is also reduced somewhat, but not altogether, in the three years following the reform. A pattern of negative, albeit not statistically significant, relationships between revenue and percent Chicano enrollment is increased following the reform. While a change from an inverse to a direct relationship between revenues and percent Mexican American enrollment is found in New Mexico, it is not a trend which coincides with passage of the reform legislation and the correlations are not statistically significant. Correlations with percent Chicano in Colorado were likewise found to be not significantly different from zero.

Pupils of Cuban descent, by contrast, were advantaged in regard to amount of local plus state revenue available for education, both before and, to a greater extent, after the reform was passed. Analogous with the case of Blacks in Colorado, this advantage can be attributed primarily to their concentration in one large urban district, Dade County, where revenues are higher than average. The nature of the relationships between spending level and percent Cuban student enrollment is explored in detail with school-level data in the next chapter.

Pupils in districts with high proportions of children from poverty families are significantly disadvantaged with respect to the amount of local plus state revenue available for education prior to the reforms in California elementary districts, Michigan and Texas. In each of these cases, the relative disadvantage of high poverty districts is improved slightly in the wake of the reforms. Pupils in districts with greater poverty concentrations--located mostly in rural areas--are at an increasing disadvantage with regard to local plus state revenues in Florida. In New Mexico, by contrast, pupils in high poverty areas have maintained a relative advantage in local plus state revenues over the five-year period from 1972-1977 and such pupils in Colorado have obtained a slight advantage following the reform. In short, the picture of the relationship between percent poor and revenue level is not a consistent one, varying considerably from state to state and over time.

Having found very weak linear correlations between revenue level and percent minority or poverty enrollment, we examined the relationships further for non-linear patterns. This was done by constructing a series of three regression equations for each ethnic group in each state. Local plus state revenue was predicted from equations with percent minority or poor enrolled (linear), percent minority or poor enrolled squared (quadratic), and percent minority or poor enrolled cubed (cubic). The increase in the proportion of variation in revenue explained each time a term was added to the equation was then examined. These proportions are presented in Table 11. If predictive power was improved considerably from one equation to the next, then the actual relationship between revenues and percent minority or poor was curvilinear and could best be described by the higher-order equation.

An examination of Table 11 underlines what was shown generally to be true in Table 10--that in most cases, minority or poverty concentration explains very little of the variation in local plus state revenues. Only in a few cases did any of these variables explain more than 10 percent of the variance in revenues, even when squared and cubed terms were added to the prediction equation. Furthermore, quadratic (squared) and cubic equations did not improve the percentage of revenue explained by more than a few percentage points in most cases. While predictability was improved to a significant extent in Florida when the equation for a curved line was used, the same amount of improvement was not found in any other case.

TABLE 11

PERCENT OF VARIATION IN LOCAL + STATE REVENUE EXPLAINED BY CONCENTRATION OF MINORITY AND POVERTY PUPILS AFTER REFORMS IN SIX STATES (1975-76)

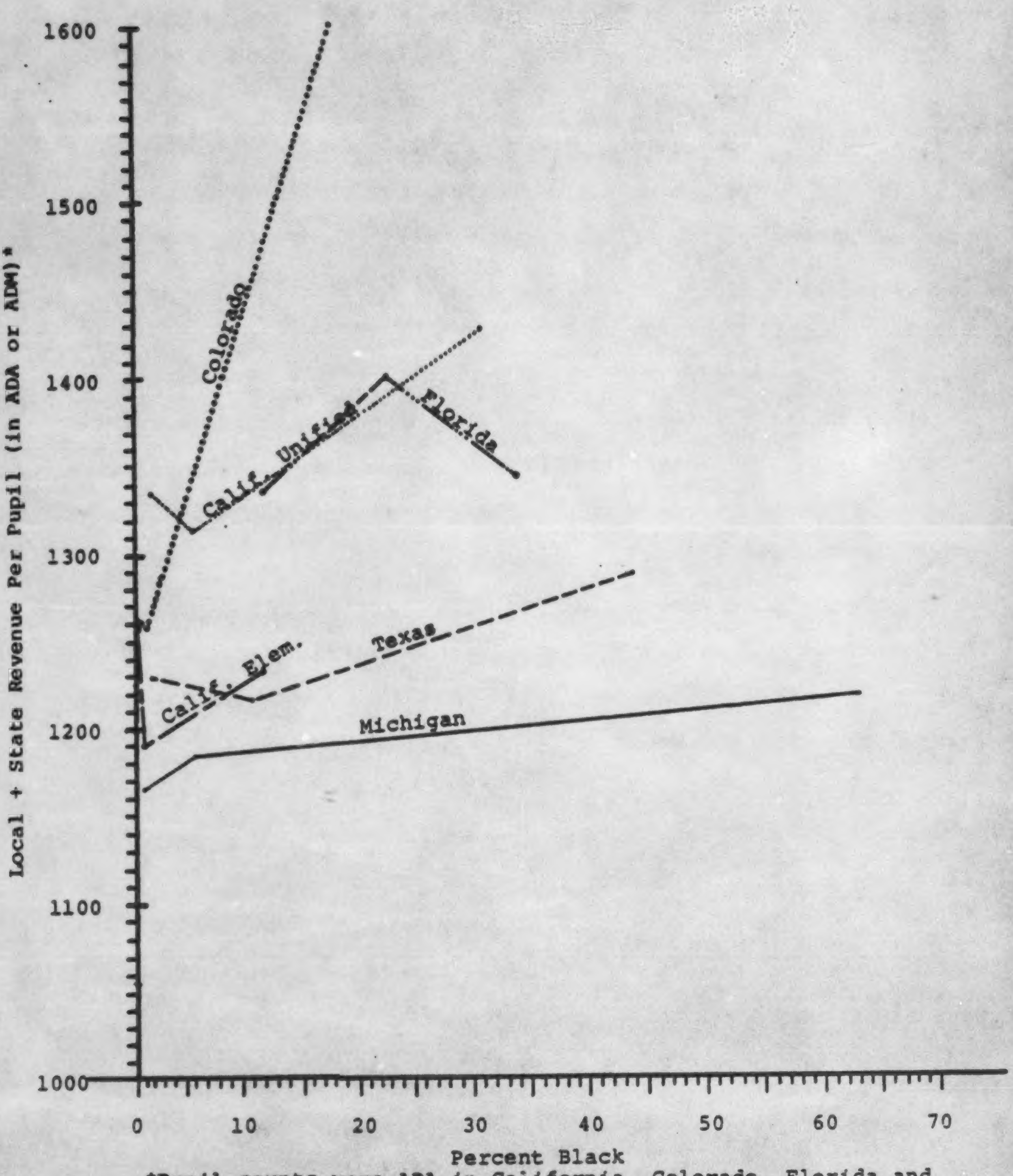
Prediction Models by State	Percent of Variation in L+S Rev. Accounted for by Concentration of:			
	Black	Hispanic	Indian	Poor
California Unified				
Linear	8.0%	1.9%		0.2%
Quadratic	8.0%	2.5%		1.7%
Cubic	13.6%	2.9%		4.7%
California Elementary				
Linear	0.7%	0.2%		0.6%
Quadratic	0.9%	0.8%		3.7%
Cubic	1.2%	2.3%		3.9%
Colorado				
Linear		0.3%		4.8%
Quadratic		2.7%		6.0%
Cubic		2.9%		7.6%
Florida				
Linear	0.0%			15.3%
Quadratic	7.6%			17.2%
Cubic	7.8%			17.5%
Michigan				
Linear	2.0%			0.9%
Quadratic	5.2%			2.2%
Cubic	6.8%			3.9%
New Mexico				
Linear		0.1%	0.4%	18.4%
Quadratic		2.3%	1.6%	21.5%
Cubic		2.6%	2.0%	22.4%
Texas				
Linear	0.2%	12.0%		12.0%
Quadratic	0.6%	13.7%		12.0%
Cubic	1.0%	13.9%		12.1%

Scatter plots of the relationships shown in Table 11 are presented in Appendix A, Figures 13-30.

Correlation-regression analysis, while it provides a single index of the strength and direction of the relationship between two variables, does not describe the actual level of funding for districts of different ethnic concentration. Another approach to presenting the relationship between ethnic or poverty concentration and the level of revenue is shown in Figures 8-10. The horizontal axes represent the percent Black, Mexican American, and poverty concentration, respectively. The vertical axis in each figure is local plus state revenue per pupil (in ADA or ADM) during 1975-76. Districts in each state were ranked by percent ethnic (or poverty) concentration and divided into three groups: the lowest 20 percent, middle 60 percent and upper 20 percent of all pupils enrolled. Mean values were then computed for each group's ethnic (or poverty) concentration and local plus state revenue per pupil and these provided the coordinates for three points which were plotted on the graph. For each state, the range of the line and its location on the horizontal axis gives a rough idea of the amount of inequality in ethnic concentration and the location of the line on the vertical axis indicates the level of local plus state revenue for each of three groups.

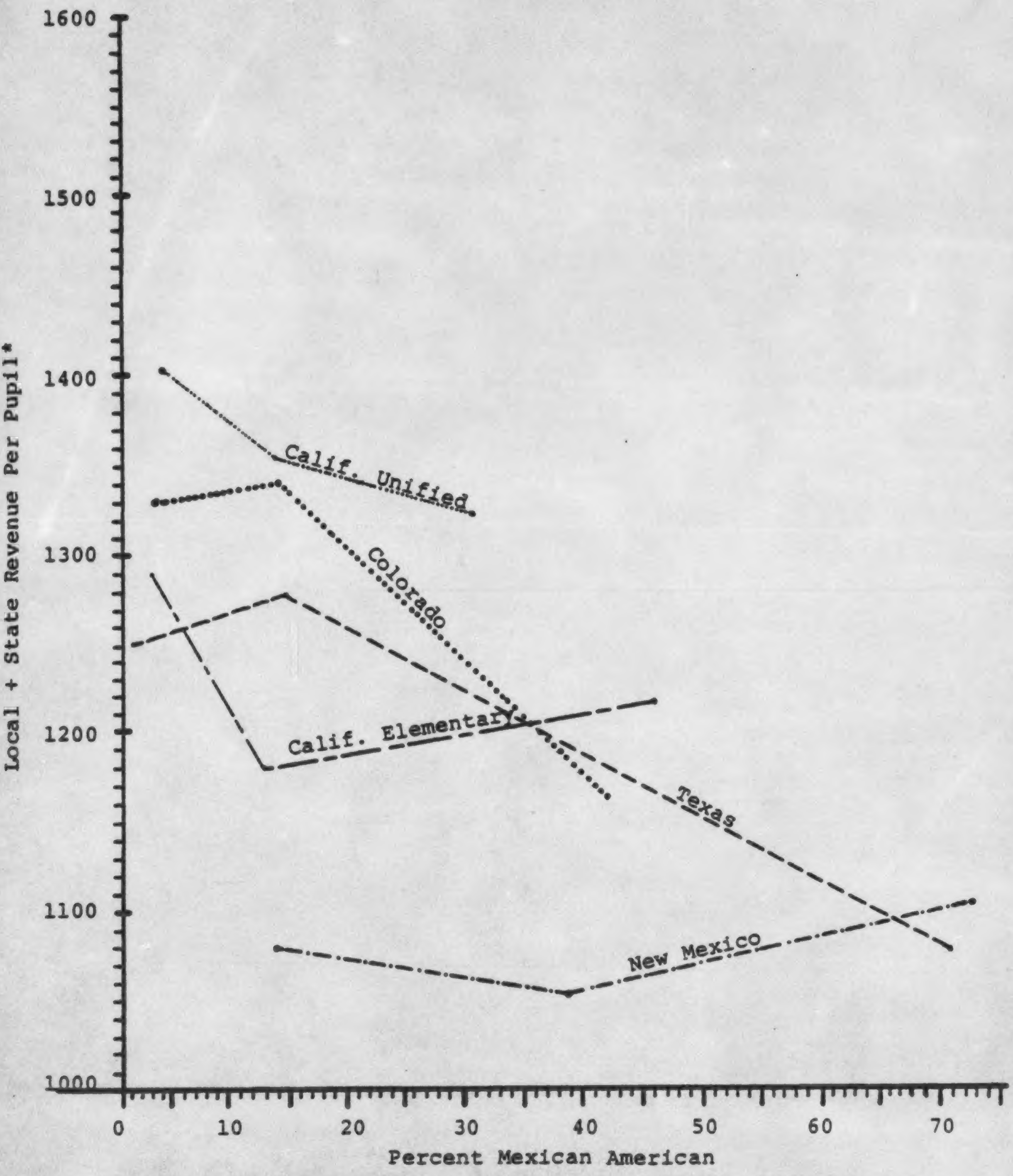
Figure 8 shows the distribution of revenues according to percent Black enrollment in five of the six states. While the pattern is not entirely a consistent one, districts with the highest concentration of Black pupils have the highest level of funding

FIGURE 8
DISTRIBUTION OF LOCAL + STATE REVENUES BY PERCENT BLACK ENROLLMENT FOR FIVE STATES, 1975-76



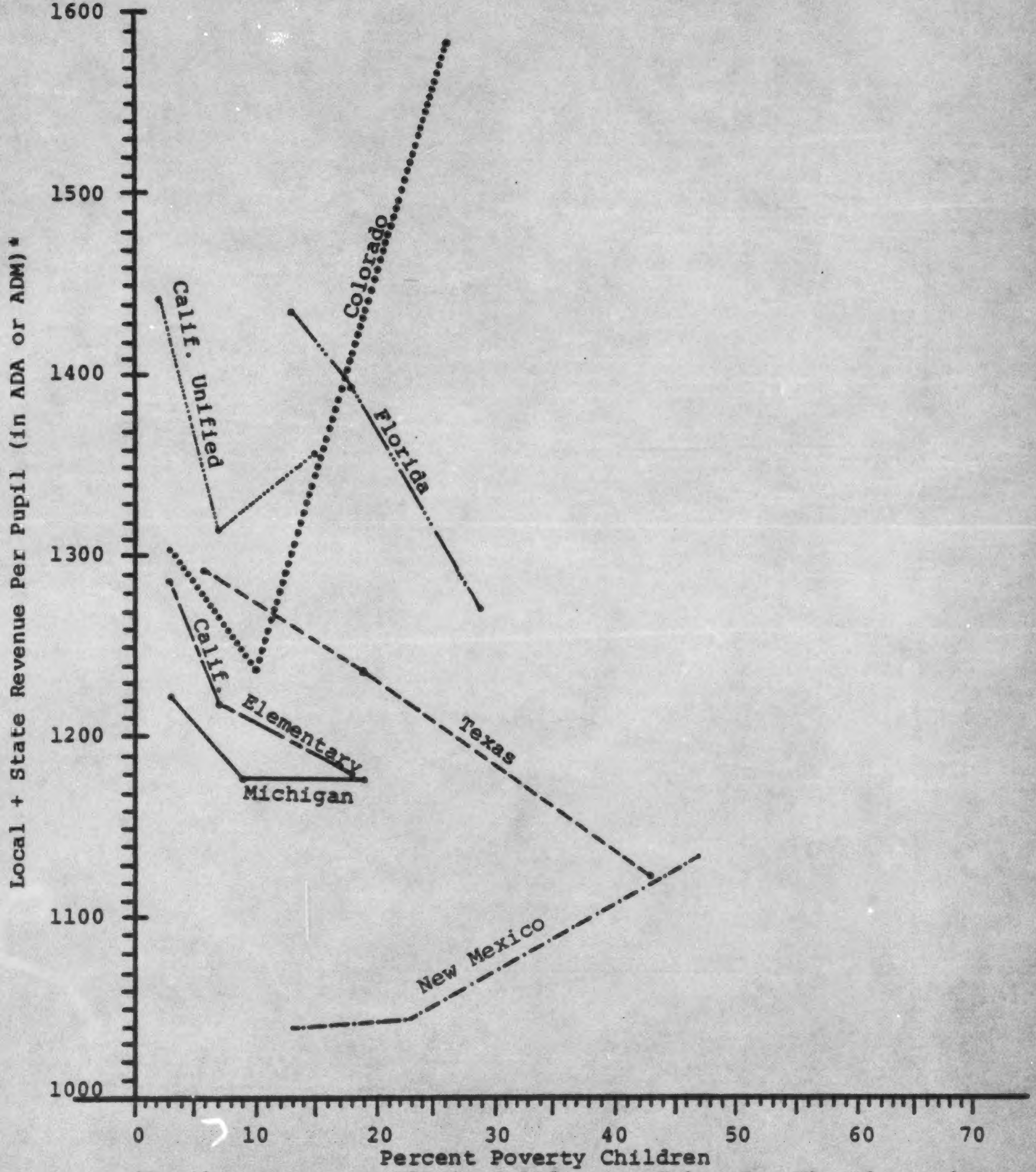
*Pupil counts were ADA in California, Colorado, Florida and Texas; they were ADM in Michigan.

FIGURE 9
DISTRIBUTION OF LOCAL + STATE REVENUES BY PERCENT MEXICAN AMERICAN ENROLLMENT FOR FOUR STATES, 1975-76



*Pupil counts were ADA in California, Colorado, Florida and Texas; they were ADM in New Mexico and Michigan

FIGURE 10
DISTRIBUTION OF LOCAL + STATE REVENUES BY POVERTY CONCENTRATION FOR SIX STATES, 1975-76



*Pupil counts were ADA in California, Colorado, Florida, and Texas; they were ADM in New Mexico and Michigan.

in all states but Florida and California elementary districts.

Figure 9 shows the distribution of 1975-76 revenues according to percent Mexican American pupils in four of the six states. Students in districts with high concentrations of Chicano pupils are clearly receiving less revenue for education than those in districts less highly concentrated with Chicano pupils, although this pattern does not hold for New Mexico. In New Mexico, very little variation in revenues is found among districts of different percent Mexican American pupil enrolled. In Colorado, the pupils in those districts with high percentages of Mexican Americans receive far less than those in districts with moderate (which include Denver) and low concentrations. This same pattern is found for Texas, where ethnic isolation is highest and where pupils in districts with the highest concentration of Mexican Americans receive far less than the other districts.

Figure 10 shows a mixed pattern with regard to the relationship between poverty concentration and level of funding among the six states. Pupils in districts with high concentrations of poverty are clearly disadvantaged in regard to funding in California elementary districts, Michigan, Florida and, most dramatically, Texas. But those in districts of high poverty concentration are relatively well off in regard to funding in Colorado and New Mexico.

A longitudinal picture of the relative gains and losses of the three subgroups of ethnic and poverty concentration in each of the six states is shown in Table 12. The values in the table are ratios of subgroup means to state mean local plus state revenue per pupil.

In California, unified districts with high concentrations of Black pupils lost much of their relative advantage with respect to educational revenues and districts with high concentrations of Chicano pupils fell below the state average after the reform. In California elementary districts, however, pupils in districts of high concentrations of Chicanos and in high poverty districts improved somewhat from their disadvantaged position with respect to the state mean level of funding.

In Colorado the major improvement in revenue occurred among districts with high concentrations of Black and poor children, the category in which Denver school district is located. A considerable relative loss in relation to the state mean was experienced by pupils in districts with the highest concentration of Chicano pupils.

In Florida, the most apparent trend is that districts with high poverty concentrations lost ground and fell further behind in the relatively disadvantaged position they occupied prior to the reform. These districts were largely rural districts to the northern part of the state, some with relatively high percent Black pupils. The group that seemed to have gained the most from the reform were those pupils in districts with low percentages of Black pupils.

For Michigan, the greatest change occurred in the districts with high concentrations of Black and poor pupils,

TABLE 12

LOCAL + STATE REVENUE PER PUPIL AS A PROPORTION OF STATE MEAN LOCAL + STATE REVENUE PER PUPIL BY CATEGORIES OF PERCENT ETHNIC GROUP ENROLLMENT IN SCHOOL DISTRICTS IN SIX STATES BY YEAR

State and Year	Proportion of State Mean Local + State Revenue by Percent Ethnic Enrollment								
	Percent Black			Percent Spanish			Percent Poor		
	Low	Mod	High	Low	Mod	High	Low	Mod	High
California Unified									
1972-73	.95	.94	1.12	1.02	.98	1.02	1.06	.94	1.02
1973-74	.98	.97	1.07	1.05	1.00	.97	1.06	.97	1.01
1974-75	.98	.96	1.07	1.04	.99	.99	1.03	.97	1.01
1975-76	.99	.97	1.05	1.03	1.00	.98	1.07	.97	1.00
California Elementary									
1972-73	1.02	1.00	.99	1.10	.98	.96	1.11	1.05	.91
1973-74	1.01	.99	1.02	1.07	.98	.99	1.06	1.02	.95
1974-75	1.03	.98	1.00	1.06	.98	.98	1.06	1.02	.95
1975-76	1.04	.98	1.02	1.06	.97	1.00	1.06	1.00	.97
Colorado									
1973-74	.97	.97	1.12	1.10	1.25	.96	1.03	.95	1.13
1974-75	1.00	.96	1.14	1.00	1.02	.88	.99	.95	1.16
1975-76	.96	.96	1.22	1.01	1.02	.88	.99	.94	1.20
Florida									
1972-73	.95	1.02	1.00				1.03	1.00	.96
1973-74	.98	1.01	.99				1.04	1.01	.94
1974-75	1.00	1.00	.99				1.03	1.01	.95
1975-76	.97	1.02	.98				1.04	1.01	.92
Michigan									
1969-70	1.03	.98	1.05				1.04	.98	.99
1970-71	1.03	.98	1.01				1.05	.99	.96
1971-72	.98	1.01	1.00				1.04	.99	.98
1972-73	.99	1.03	.93				1.05	1.00	.90
1973-74	.98	.99	1.04				1.03	.99	1.00
1974-75	.98	1.00	1.03				1.03	.99	.99
New Mexico									
1972-73				1.11	.96	1.00	1.03	.94	1.14
1973-74				1.11	.96	1.05	.99	.94	1.16
1974-75				1.03	.98	1.04	.98	.97	1.05
1975-76				1.01	.99	1.03	.97	.97	1.06
1976-77				1.01	.98	1.05	.96	.97	1.06
Texas									
1974-75	1.00	.99	1.03	1.04	1.04	.84	1.09	1.00	.89
1975-76	1.00	.99	1.05	1.01	1.04	.88	1.05	1.00	.91

Low: Districts of lowest 20% of pupils ranked by ethnic percentage enrolled.
High: The 20% of pupils in districts of highest percent ethnic enrollment.
Mod: The pupils in districts in between "low" and "high" percent ethnic.

largely due to the influence of Detroit in this group. As explained earlier, a dramatic drop in funding for Detroit was witnessed just prior to the 1973 reform because voters failed to pass a local tax levy, leaving the massive urban district in a severe financial crisis. The reform apparently helped bail the district out and Detroit experienced relative improvement in revenues after 1973.

In New Mexico the only changes which coincide with the reform of 1974 are a decrease in the large relative advantage enjoyed by students in districts of low concentrations of Mexican American pupils and those in districts of high concentrations of poverty. The high poverty areas are primarily rural as are districts with low percentages of Mexican American and with high percentages of Indian pupils.

In Texas the greatest change occurred in districts with high concentrations of Chicano pupils, where a large revenue disadvantage was improved somewhat. The pupils in these districts, however, remain the most relatively disadvantaged subgroup of all those identified in our study. A slight improvement occurred among districts with high concentrations of poverty pupils -- probably essentially the same group as those of high Chicano concentration -- but the change was not sufficient to bring the group even near to par with the state mean.

The Relative Impact of State and Federal Aid on Ethnic Disparities

The results reported above, for the most part, dealt with state plus local revenues; they did not report the relative impact of revenues from these two sources or of federal revenues. Therefore, the question of the relative impact of revenues from the different sources on pupils in districts with various concentrations of ethnic and poor students will be examined here. Table 13 presents correlations of local, local plus state, and local plus state plus federal revenues with district percentages of ethnic minorities and the poor.

From Table 13, it may be seen that a strong positive relationship exists between percent Black and local revenue in California unified districts and in Colorado. In both of these states, Black students tend to be concentrated in large urban, relatively property-wealthy districts. Among California unified districts, state revenue tends to add to the advantage enjoyed by districts with high concentrations of Black pupils, while the converse is true with Colorado. In the other states with significant numbers of Black pupils, the relationship between percent Black and local revenue is very weak. These results are deceptive for Florida. In that state, the relationship between percent Black and revenues is nonmonotonic--districts with moderate proportions of Black pupils tend to receive more revenues than districts with either high or low concentrations of Black pupils. State revenue favored the districts with greater concentrations of Black pupils in California and Florida, but took away from the local advantage of these districts in Colorado. The same was true in Michigan only after the reform. In all of the states, federal revenue tended to aid districts with greater concentrations of Black pupils, although the effect of federal revenue was relatively small in Texas.

TABLE 13

PEARSON CORRELATIONS RELATING REVENUES PER PUPIL BY SOURCE TO PERCENT ETHNIC ENROLLMENT IN SIX STATES BY YEAR

State & Year	Revenue by Source with Percent Ethnic								
	% Black With			% Spanish With			% Poor With		
	Local Rev.	L+S Rev.	L+S+F Rev.	Local Rev.	L+S Rev.	L+S+F Rev.	Local Rev.	L+S Rev	L+S+F Rev.
California Unified									
1972-73	.31**	.35**	.47**	-.08	-.09	-.06	.11	.12	.24**
1973-74	.22**	.30**	.42**	-.17*	-.15	-.13	.04	.08	.23**
1974-75	.21**	.32**	.45**	-.17*	-.12	-.09	.08	.11	.28**
1975-76	.16*	.28**	.38**	-.21**	-.14	-.10	.04	.04	.26**
California Elementary									
1972-73	-.02	.03	.15**	-.24**	-.16**	-.06	-.39**	-.34**	-.19**
1973-74	-.02	.09*	.21**	-.25**	-.08	.03	-.34**	-.25**	-.07
1974-75	-.05	.05	.22**	-.26**	-.11*	.02	-.33**	-.22**	.02
1975-76	-.03	.08	.24**	-.25**	-.06	.08	-.31**	-.15**	.09
Colorado									
1973-74	.48**	.39**	.48**	-.04	-.08	-.02	.15	.11	.17
1974-75	.56**	.46**	.55**	.07	-.003	.05	.30**	.23**	.30**
1975-76	.62**	.58**	.66**	.08	.06	.11	.25**	.22**	.27**
Florida									
1972-73	.03	.09	.18	.50**	.38**	.52**	-.42**	-.18	-.08
1973-74	-.02	.01	.08	.46**	.52**	.64**	-.39**	-.27	-.22
1974-75	-.12	-.04	.06	.33**	.42**	.60**	-.44**	-.30*	-.16
1975-76	-.09	.00	.10	.35*	.58**	.67**	-.45**	-.39**	-.24
Michigan									
1969-70	.14**	.14**	n.a.				-.06	-.07	n.a.
1970-71	.07	.04	n.a.				-.12*	-.15**	n.a.
1971-72	.02	.07	.34**				-.19**	-.13*	.15**
1972-73	-.15**	-.16**	.10*				-.31**	-.31**	-.04
1973-74	.01	.16**	.39**				-.18**	-.07	.18**
1974-75	-.08	.14**	.41**				-.26**	-.09	.18**
New Mexico	% Indian								
1972-73	.89**	.63**	.64**	-.61**	-.24	-.16	.19	.52**	.53**
1973-74	.69**	.32**	.44**	-.58**	-.02	-.01	.16	.51**	.58**
1974-75	.47**	.15	.38**	-.44**	.00	.01	.10	.31*	.49**
1975-76	.58**	.06	.26*	-.45**	.03	.09	.17	.43**	.58**
1976-77	.60**	.05	.26*	-.49**	.12	.10	.19	.44**	.38**
Texas									
1974-75	.08*	.04	.06	-.32**	-.34**	-.19**	-.37**	-.34**	-.16**
1975-76	.09*	.07	.11**	-.28*	-.27**	-.06	-.32**	-.25**	-.02

Significance levels: * = .01 to .001; ** = less than .001.

Note: Dashed line indicates when the state reform was passed.
"n.a." indicates data not available.

The treatment of federal impact aid under the 1974 reform in New Mexico affected the amount of state aid received by Native American pupils. Once federal impact aid was counted as local revenue lost due to untaxed federal property under the new law, districts with high concentrations of Indian pupils received less state equalization aid.

In three of the five states with significant numbers of Spanish-background pupils, districts with greater concentrations of such pupils tended to receive less local revenue per pupil. These states were California (both unified and elementary), New Mexico, and Texas. In California and New Mexico, state revenue eliminated the relationship between percent Spanish-background pupils and revenue, but state revenue had little effect on this relationship in Texas. In Colorado, percent Spanish-background pupils had little relationship with local revenue or with state plus local revenue. In Florida, a strong positive relationship was found between percent Spanish-background and local revenue.[8] Before the reform, state revenue tended to reduce this relationship, while after the reform, state revenue tended to strengthen the relationship. Federal revenue benefitted students in districts with high concentrations of Spanish-background pupils in all of the states, albeit this effect was small in some of the states.

Percent poverty had a significant negative relationship with local revenue in California elementary, Florida, Michigan, and Texas. In Colorado, a significant positive relationship was found between percent poverty and local revenue, but only during the post-reform years. In all of the states where students in districts with lower personal wealth received less local revenue, as well as in New Mexico, state revenue benefitted such students. However, these benefits were sometimes small. In all states, federal revenue tended to benefit students in districts with less personal wealth, although again, sometimes the benefits were small.

RQ 7: Explaining the Distribution of Revenues

Having examined the change (or lack of change) in the distribution of educational revenues among the various ethnic and income groups, the important question for policy makers and planners remains to be answered: How do we account for the changes (or lack of changes) in educational revenues to districts with high concentrations of minority and poverty children? An adequate response to this question would be derived from modeling the particular features of the legislation in each of the states, a task which is beyond the scope of our study. We will instead address the question of the extent to which reforms geared to equalize by property wealth would benefit minority and poor children.

At the core of the problem of inequalities in school finance systems can be found disparities in district property wealth. Because education has traditionally been funded chiefly from local property taxes, wealth-related disparities can be found in almost every state. The states in this study all show a high degree of inequality in spending that is related to district wealth with the exception of New Mexico, where local revenue makes up less than one-fifth of the total revenues available for education. The key feature of the school finance reforms of the 1970s has been to channel more state aid to districts which are poor in property wealth. Although it was clear from our data that wealth-related disparities continued to exist after the reforms were enacted, one might speculate about the prospects of aiding poor and minority children through property wealth equalization formulas.

Table 14 shows the correlations between equalized property valuation per pupil and the percent concentration of Black, Spanish heritage, poor and urban children. It is immediately obvious that there exists no strong linear association between property wealth and percent Black pupil enrollment in any of the states. The only significant association between percent Black enrollment and equalized assessed valuation of property is found in Michigan prior to 1972; otherwise, the correlations are very low and mostly positive.

A consistent pattern of low inverse correlations was found between percent Mexican American and district property wealth in every state for every year. Thus, the greater the concentration of Mexican American pupils, the lower the property wealth of the districts. For Cuban descendents in Florida, most of which are located in Dade County, the reverse is true: property values are generally higher in Dade than for pupils in other districts.

TABLE 14

CORRELATIONS BETWEEN DISTRICT PROPERTY WEALTH AND ETHNIC, POVERTY AND URBAN CONCENTRATION IN SIX STATES OVER TIME

State and Year	Equalized Valuation Per Pupil Correlated With:					
	Percent Indian	Percent Black	Percent Spanish	Percent Poor	Average Income	Percent Urban
California Unified						
1972-73		.10	-.11	.07	.02	-.14 [a]
1973-74		.11	-.14	.08	.02	-.17*
1974-75		.06	-.16*	.04	.03	-.19*
1975-76		.04	-.17*	.04	.03	-.18*
California Elementary						
1972-73		-.07	-.12**	-.09*	-.004	-.07
1973-74		-.07	-.13**	-.09*	-.001	-.06
1974-75		-.07	-.12**	-.07	-.004	-.05
1975-76		-.05	-.11*	-.06	.003	-.05
Colorado						
1973-74		.17	-.06	.07		-.09
1974-75		.09	-.16	-.04		-.01
1975-76		.05	-.22	-.11		.04
Florida						
1972-73		.02	.48**	-.34*	.57**	.35*
1973-74		.03	.33*	-.18	.36*	.22
1974-75		-.08	.36**	-.43**	.53**	.37*
1975-76		-.10	.28	-.42**	.49**	.33*
Michigan						
1969-70		.21**		.10	.02	.35**
1970-71		.17**		.05	.07	.35**
1971-72		.14**		-.02	.14**	.35**
1972-73		.09		-.05	.18**	.33**
1973-74		.06		-.08	.21**	.32**
1974-75		-.03		-.15*	.27**	.26**
New Mexico						
1972-73	.19		-.17	-.03	-.04	-.24
1973-74	.19		-.19	-.02	-.05	-.24
1974-75	.18		-.21	-.01	-.05	-.22
1975-76	.17		-.22	-.03	-.04	-.19
1976-77	.15		-.24	-.02	-.03	-.16
Texas						
1974-75[b]		-.01	-.12**	-.09*	.08	-.17**
1975-76		-.02	-.13**	-.03	.01	-.30**

a. Dotted line indicates when reform law was passed.

b. Changes in correlations for Texas between years may indicate the fact that a new set of market value estimates were used for the two years.

The correlation between percent poor and property wealth is found to be negative in all states except California unified districts, but the relationships are so weak as to be non-significant in more than half of the cases. A notable exception is Florida, where relatively strong inverse relationship is found between property wealth and percent below poverty. Thus, the concern expressed by Coons, that it will be difficult to show that poor children are a "suspect class" in litigation, is warranted with respect to five of the six states in this study. The relationship between personal income and property values is not a simple linear one in these states. One cannot conclude from this, however, that no relationship exists. The relationship could be non-linear and more complex, involving interactions with other variables, such as community locale. These interactions are discussed more thoroughly in the individual state reports in Volumes 2-6.

Mean income provides another index of personal wealth, but it adds little additional information to the results found for percent poor. The direct relationships between family income of district residents and district property wealth in Florida and Michigan, however, are somewhat stronger than the correlation with percent poor.

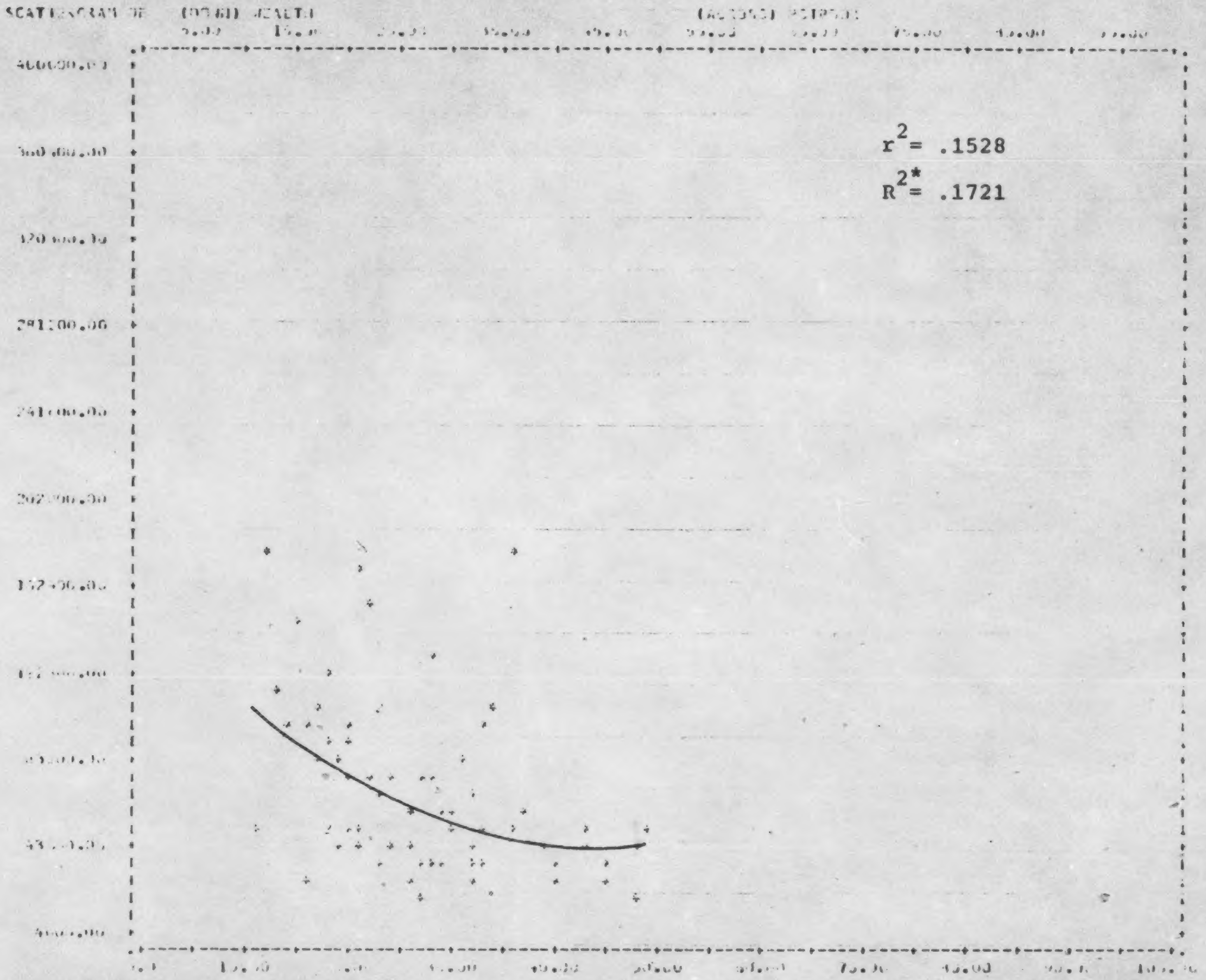
Table 14 also shows that property wealth is generally greater in urban areas than in rural areas in Florida and Michigan, but relatively lower in urban areas in California and Texas. For California elementary districts, Colorado and New Mexico, the correlations are not significantly different from zero, although the relationships are inverse. Thus, the patterns of distribution of poverty values by urban concentration vary from state to state and no generalization can be made across states.

Having found only weak linear associations between property valuation and ethnic/poverty concentration, we examined these relationships for nonlinear patterns. This was done by adding ethnic concentration squared and cubed terms to the equation predicting property valuation per pupil, as was done previously in predicting revenue level. Predictive power by and large was not improved much with nonlinear models. In each state, less than 10 percent of the variation in property valuation could be explained by ethnic or poverty concentration, even when nonlinear patterns were examined, with one exception. In Florida, some 17 percent of the variation in property wealth could be accounted for by its relationship to percent poverty. The scatterplot of this relationship, shown in Figure 11, indicates an inverse relationship between district property wealth and percent of students from poverty families in the district. Thus, in Flordia, districts with high poverty concentration tend to have lower property valuations on the average than districts with low percent poverty families.

The remainder of the scatter plots relating district wealth to the percent of each minority and poverty group in each of the states are included in Appendix A, Figures 31-46. A cursory perusal of these charts reenforces our earlier assertion that

FIGURE 11

FLORIDA SCHOOL DISTRICTS: PROPERTY WEALTH PER PUPIL WITH PERCENT POVERTY PUPILS, 1975-76



*R is the multiple correlation coefficient from a quadratic equation predicting local + state revenue per pupil.

poverty and minority group concentration are not good predictors of district property valuation.

Two multiple regression models were used to account for the variation in revenues. The design and rationale for these models was explained previously in Chapter 2. The first model was designed to ascertain how much of the relationship between revenue level and the percent minority or poverty group enrollment can be accounted for by district wealth and urban-rural locale, separately and in combination. The second model examines the unique contribution of six key variables in accounting for the variation in revenues.

Only in those states where at least moderate relationships were found between percent minority or poverty group concentration and the amount of local plus state revenue available per pupil did we endeavor to account for such relationships by employing the first model. We hypothesized from the outset of this study that the property wealth and locale of a district would be important explanatory variables accounting for what minority and poverty-related disparities in spending were found.

Table 15 shows the amount of variation in revenues which can be accounted for by percent minority or poverty group concentration before removing the effects of wealth and urban locale (column 1), after removing the effect of district property wealth (column 2), after removing the effect of percent urban (column 3), and after removing the effects of both district

TABLE 15

PERCENT OF VARIATION IN LOCAL + STATE REVENUE PER PUPIL ACCOUNTED FOR BY MINORITY OR POVERTY GROUP CONCENTRATION, BEFORE AND AFTER REMOVING THE EFFECTS OF PROPERTY WEALTH AND PERCENT URBAN

State & Year	Percent of Variation in Revenue Accounted for by Minority or Poverty Group Concentration: (1) Before Controlling Wealth or Percent Urban	(2) After Controlling Wealth	(3) After Controlling Percent Urban	(4) After Controlling Wealth & Urban
Predictor: Percent Black Enrollment				
California Unified	***			
1972-73	(+)12%	7%	10%	5%
1973-74	(+) 9	5	10	4
1974-75	(+)11	8	11	7
1975-76	(+) 8	6	8	5
Colorado				
1973-74	(+)15	8	8	0*
1974-75	(+)21	16	8	0
1975-76	(+)33	30	11	0
Florida**				
1972-73	14	1	11	1
1973-74	12	4	8	3
1974-75	6	1	2	1
1975-76	12	5	6	4
Predictor: Percent Soanish Enrollment				
Florida				
1972-73	(+)14	0	10	0
1973-74	(+)27	11	21	10
1974-75	(+)23	5	16	6
1975-76	(+)34	14	21	12
Texas				
1974-75	(-)10	7	15	9
1975-76	(-) 7	5	9	5
Predictor: Percent Poverty Families				
California Elementary				
1972-73	(-)12	4	9	1
1973-74	(-) 7	1	4	0
1974-75	(-) 5	0	4	0
1975-76	(-) 3	0	2	0
Florida				
1972-73	(-) 3	1	0	0
1973-74	(-) 7	3	1	1
1974-75	(-) 9	0	2	0
1975-76	(-)15	1	2	0
New Mexico				
1972-73	(+)27	28	2	6
1973-74	(+)26	27	2	4
1974-75	(+) 9	10	0	1
1975-76	(+)18	19	7	12
1976-77	(+)19	20	4	8
Texas				
1974-75	(-)12	8	14	9
1975-76	(-) 6	4	9	5

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*A zero indicates "less than .5%." All figures are rounded to the nearest whole percentage point.

**In Florida, dummy variables were created from categories of percent Black enrollment since the relationship was non-linear.

***Signs in parentheses () indicate the direction of the original bivariate relationship between percent minority group (or poor) and local plus state revenue per pupil.

wealth and percent urban (column 4). The sign in parentheses indicates the direction of the bivariate relationship between percent minority or poverty group enrolled and the level of revenues.

Only in three states did percent Black enrollment explain at least a moderate amount of variation in revenues--California unified districts, Colorado and Florida. In California unified districts, about half of the variation in revenues which is associated with percent Black enrollment can be accounted for by school district property values. The other half remains unaccounted for.

In Colorado, before the reform, district property values explained about half of the covariation between percent Black enrollment and revenue level. After the reform, however, very little of the variation in revenues associated with percent Black enrollment could be accounted for by district property values. Percent urban population was a more important factor in explaining the relationship between revenue level and percent Black. This may be due to the fact that Denver school district, where most Black pupils attend school, was given special consideration apart from its wealth in the new funding formula.

In Florida, almost all of the variation in revenue associated with percent Black enrollment could, in turn, be explained by district property values. Percent urban population was also an important explanatory factor in accounting for the relationship between percent Black and revenue level, but this may be due to the fact that urban districts were also wealthier districts and, thus, combining percent urban with wealth did not improve predictive power much beyond what wealth was able to explain.

Percent Spanish heritage pupil enrollment was directly related to revenue level in Florida, primarily because most of the students of Cuban parentage are located in Dade County district, a district with a high spending level. All of this relationship before the reform and most after can be accounted for by district property wealth.

An inverse relationship was found in Texas between revenue level and percent Spanish surname enrollment, both before and, to a lesser extent, after the reform. Less than half of the variation accounted for by percent Chicano enrollment could be attributed to property wealth differences. This indicates that other factors are operating in Texas determining the relationship between percent Chicano enrollment and revenues from local and state sources.

Percent poverty is found to be inversely related to revenue level in California elementary districts, Florida and Texas and directly related to revenue level in New Mexico. In California elementary districts and Florida, almost all of the revenue variation associated with percent poverty population can be explained by property value differences. In Texas, the majority of the poverty-related variation in revenues is accounted for by neither property values nor percent urban population.

New Mexico is altogether different. A fairly strong direct relationship was found between local and state revenue (including federal impact aid) and percent poverty enrollment, especially before the reform was enacted. This relationship could not be accounted for by property valuation. Percent urban population, however, explained almost all of the poverty-related variation in revenues. This may be due to the fact that federal impact funds, which are counted by the state and in our analyses as local dollars, went more to rural than urban districts.

We learned from this analysis that, where a relationship is found between ethnic or poverty concentration and the amount of revenue available for education, this relationship is not always explicable in terms of property wealth and rural-urban locale. Each state and each minority group must be examined individually to understand the nature of the original relationship. Thus, while property values explain most of the relationship between percent Black enrollment and revenue level in Florida, percent urban population is a better explanatory factor in Colorado. And while some of the disadvantage experienced by districts with high percentages of Chicano pupils in Texas can be accounted for by property wealth deficiencies, the majority of the ethnic-related inequalities in revenues cannot be explained by property wealth or urban-rural locale. Other factors should be examined to account for these unexplained inequities. The second multiple regression model employed here is designed to incorporate a more complete set of variables to account for revenue variation.

Table 16 presents results from a series of multiple regression

TABLE 16

PERCENT OF VARIATION IN LOCAL + STATE REVENUE PER PUPIL EXPLAINED BY SIX PREDICTORS IN SIX STATES BEFORE AND AFTER REFORM LEGISLATION

	Variation in Local + State Rev. Explained by:							
State & Year	(1) Prop. Value	(2) Tax Rate	(3) Pct. Urban	(4) Pct. Black	(5) Pct. Span.	(6) Mean Income	(7) Total Set	(8) Var. Shared
Calif. Unified								
1972-73	(+)68%	(-) 8%	(+) 1%	(+) 3%	(-) 0%	(-) 0%	84%	3%
1973-74	(+)54	(+) 7	(+) 0	(+) 2	(-) 0	(-) 0	73	10
1974-75	(+)61	(+)10	(+) 0	(+) 1	(-) 0	(-) 0	77	5
1975-76	(+)65	(+)10	(+) 0	(+) 1	(-) 0	(-) 0	76	0
Calif. Elem.								
1972-73	(+)55	(+)27	(+) 0	(+) 0	(-) 0	(+) 0	82	0
1973-74	(+)34	(+)14	(+) 0	(+) 1	(-) 1	(+) 1	73	23
1974-75	(+)50	(+)11	(+) 0	(+) 0	(-) 0	(+) 0	70	9
1975-76	(+)43	(+) 9	(+) 0	(+) 1	(-) 0	(+) 1	51	0
Colorado								
1973-74	(+)43	(+)11	(+) 0	(+) 1	(-) 1	(+) 1	65	8
1974-75	(+)40	(+)15	(+) 2	(+) 1	(-) 1	(+) 1	70	10
1975-76	(+)34	(+) 9	(+) 1	(+) 2	(+) 0	(+) 1	72	24
Florida								
1972-73	(+)45	(+) 4	(+) 0	1	(+) 0	(+) 0	73	23
1973-74	(+)18	(+) 2	(+) 2	0	(+) 4	(+) 4	55	25
1974-75	(+)31	(-) 0	(+) 0	0	(+) 5	(+) 0	60	24
1975-76	(+)29	(+) 1	(+) 0	0	(+) 8	(+) 0	76	38
Michigan								
1971-72	(+)32	(+)14	(+) 0	(+) 1	--	(+) 0	78	31
1972-73	(+)23	(+)17	(+) 0	(-) 1	--	(+) 0	81	40
1973-74	(+)22	(+)19	(+) 0	(+) 2	--	(+) 0	78	35
1974-75	(+)25	(+)18	(+) 0	(+) 2	--	(+) 0	77	33
				Pct. Indian				
New Mexico								
1972-73	(+) 5	(-) 0	(-) 3	(+) 5	(-) 3	(-) 2		
1973-74	(+) 5	(-) 2	(-) 9	(+) 0	(-) 2	(-) 2	48	28
1974-75	(+)23	(-) 6	(-) 7	(+) 0	(+) 0	(-) 0	49	14
1975-76	(+)10	(-) 0	(-) 1	(+) 3	(+) 2	(-)10	37	11
1976-77	(+) 9	(-) 1	(-) 1	(+) 2	(+) 0	(-) 7	39	19
Texas								
1974-75	(+)35	(-) 4	(-) 1	(+) 0	(-) 3	(+) 1	57	13
1975-76	(+)32	(-) 5	(-) 2	(+) 0	(-) 1	(+) 1	48	7

Signs in parentheses () indicate the direction of the bivariate relationship between predictor and criterion variables.

All figures are rounded to the nearest whole percent. Thus, zeros may indicate less than .5 percent.

In Colorado analyses, percent children from poverty families was substituted for mean family income. Thus, the sign of the original correlation is reverse of what would be expected using mean income.

In Florida, percent Black was divided into low, medium and high since its relationship with revenue was curvelinear.

analyses utilizing the second model, designed to examine the independent contributions of property wealth, tax rates, percent urban, percent Black, percent Spanish, and income level in explaining revenue variation in each of the states in this study. The data in this table were computed according to the procedure described in Chapter 2. Essentially, this involved comparing the total amount of variation in revenues explained (R_f^2) by the full model of all predictor variables with the variation explained by a more restricted model excluding one of the predictors. The difference between the two R^2's is the amount of variance which can be attributed to the excluded predictor independent of the other variables in the set. For example, in California unified school districts, the full model included property wealth, equalized tax rate, percent urban, percent Black, percent Spanish-surname, and mean income of district residents as predictors. Restricted models were run excluding each of these predictors in turn. The percentages in column 1 through 6 respectively represent the difference between the R^2 of the total set in the full model (column 7) and the R^2 for the restricted model which excluded the variable in that particular column. The "shared variance" (column 8) is the difference between the R^2 of the full model and the sum of the variance explained independently by each of the predictors (columns 1-6). One might estimate the amount of "unexplained variance" by calculating the difference between the R^2 of the full model and unity, and this may be interpreted as that portion of the variation in local plus state revenue which was not explained by the full model.

A caveat is offered in the interpretation of the results of multiple regression analyses such as these. When supressor effects are found, at least some of the "independent variation" for supressor variables is, in fact, due to relationships of the supressor variables with other predictors, rather than with the criterion. This fact should be kept in mind when the results are interpreted. Supressor effects were identified in examining our results but are noted only where they create particular problems in interpretation.[9]

From Table 16 it is clear that, for California unified school districts, property wealth made a large independent contribution to revenue variation both before and after the reform. The reform appears to have decreased this strong positive contribution initially, although the influence of wealth has been consistently increasing since the reform. Tax rate also made a significant independent contribution toward explanation of revenue variation. The reform appears to have caused this contribution to reverse from an inverse one (higher tax effort means less revenue), which might be seen as a change toward greater taxpayer equity. Percent Black enrollment made a significant contribution to explaining variation in revenues during all years, although the magnitude of this contribution has been decreasing gradually since the reform. Finally, percent urban, mean family income, and percent Spanish-surname made very little independent contribution toward explaining variation in revenues and, in fact, acted as supressor variables on several occasions. Factors other than the ones included in this model seem to become somewhat more important after the reform than before; the percentage of variation explained was noticeably less after the reform.

For California elementary school districts, property wealth behaved much as it did for unified districts. The effect of tax rate, however, was different. The direct relationship of tax rate to revenue level was found for all years, but its strength as a factor independently explaining revenue variation diminished sharply since the reform in 1972. None of the other four predictors made much independent contributions to the explanation of revenue variation. Finally, as with unified districts in California, the proportion of variance which could be explained by the predictors included in this model decreased following the reform.

In Colorado, as in California, property wealth made a large independent contribution to explaining revenue variation both before and after the reform. However, the Colorado reform appears to have decreased somewhat the effect of wealth on revenue variation. This is the effect that one would expect in a power equalizing system such as the one enacted in Colorado. Furthermore, the independent contribution of tax rate to revenue variation increased in the first year after the reform, then decreased. One might expect, if a power equalizing system was working as it is designed, that the effect of tax effort on revenue disparities would increase and be somewhat larger than was found in Colorado in the second year after the reform. Before the reform, percent urban made no independent contribution to revenue variation; however, after the reform, percent urban made a small but noticeable contribution, probably reflecting the advantage given to Denver under the new law. Percent Black also made a small but noticeable contribution both before and after the reform. Percent Spanish-surname made a small independent contribution before the reform which disappeared after the reform. Contrary to what was found in California, the amount of revenue variation which could be explained by the predictors included in the analyses increased after the reform.

In Florida, property wealth made a substantial independent contribution to explaining variation in revenues, both before and after the reform. However, the reform resulted in a noticeable reduction in this contribution, probably due to the fact that factors unrelated to property wealth, such as the pupil weighting system, have more influence on the distribution of state revenues under the reform. Before the reform, tax rates had a small but significant independent influence on the variation in revenues. After the reform, this contribution practically disappeared, probably due to tightened restrictions on tax rates. Percent urban and mean family income had small but noticeable independent effects on revenue differences in the first year after the reform, but no real influence thereafter. And percent Black made no significant independent contribution to the explanation of revenue variation either before or after the reform. Of particular interest is the fact that percent Spanish-surname enrollment did not account for a significant amount of variation in revenues before the reform, but did afterwards. Some of the features of the reform, such as weighted pupil programs, were designed in a manner which would benefit Dade County, which contains the bulk of the Spanish surname pupils in the state. Finally, it may be seen that the amount of variance which could be explained by the chosen predictors decreased in the first year after the reform, then increased during the next two years. It would appear that district property wealth decreased in relative importance as a factor explaining revenue variation immediately after the reform, but regained much of its prior influence in accounting for revenue inequalities by the second year after the reform.

In Michigan, during each year the independent contribution of property wealth toward explaining revenue disparities was sizeable, but somewhat less than the states discussed previously. The largest decrease in the influence of property wealth came between the two pre-reform years. Thus, it is difficult to attribute the decline of the influence of wealth to the reform. The independent contribution of tax rate was also large in all years. The other predictors made little independent contribution to explaining revenue variation during any of the years with the exception of percent minority. The independent contribution of percent minority to revenue variation increased slightly after the reform, which appears to have benefitted Blacks in Michigan. However, other effects which one would expect to find with Michigan's power equalizing reform, were not evident, such as a decline in the influence of wealth and an increase in the effect of tax effort on revenue disparities.

Summary

A reader looking for a blanket statement about the impact of the reforms that can be generalized across states will be sadly disappointed. Perhaps the only general conclusion which can be drawn across states in this study is that we found no large revenue changes affecting poor and minority children. A succinct summary of the major findings of the analyses from district-level data follows.

Spending Inequalities. An examination of the dispersion of revenues and expenditures reveal that:

- Reform generally resulted in a decline in spending disparities, but the decrease was very small.

In one of the seven cases studied, Colorado, the degree of revenue inequality declined in the first year following reform, but then increased to a level even higher than in the pre-reform year.

Wealth Discrimination. A major theme in many of the reforms was the achievement of fiscal neutrality, defined either as the elimination of wealth-related disparities altogether or the guarantee that a given level of local tax effort would produce the same amount of revenue per pupil.

The result of our analyses indicate that:

- Wealth-related inequalities were reduced slightly after the reforms in most cases.

The exception to this general findings is New Mexico, where there was little wealth discrimination prior to reform.

Federal revenues were somewhat wealth neutralizing, but not as much as state revenues. With the exception of New Mexico, there remained a high degree of wealth discrimination even after reforms were implemented.

Ethnic Isolation. The distribution of racial and ethnic minorities differs considerably from state to state and from one group to another. The pattern of ethnic isolation of major concern in our study was the concentration of a majority of the members of a group into districts where they constitute a high percentage of the enrollment. According to this definition, we found:

- The greatest ethnic isolation of Mexican Americans was found in Texas; Blacks are most isolated in Michigan; and Native Americans are highly isolated in New Mexico.

Since the ability to identify ethnic differences in funding is directly related to the degree of ethnic isolation, the findings on ethnic isolation should be taken into consideration in interpreting the results of the analyses of ethnic group differences in revenues.

Ethnic and Income Group Means Analysis. With regard to differences among ethnic and income groups in average revenues statewide, we found:

- Before the reforms, Blacks were located in districts with above average revenues per pupil for education and Mexican Americans were below average generally.
- The reforms did very little to change the relative amount of revenue received among ethnic groups in most cases.

A notable exception to the general finding of no change is that Native Americans lost their clear revenue advantage after the reform in New Mexico. This may have been due to the fact that under the new law, federal impact aid was treated as local revenue in determining state equalization entitlement. The result was a relative loss in state aid to districts with concentrations of Indian students.

- Children from families with incomes below the federal poverty line were relatively better off before the reforms in about half the cases and worse off in the other half.
- Little change on the average in the amount of revenue available for education of poverty students resulted from the reforms.

The only notable exception to this general finding is in Texas, where pupils from poverty families lost some of their relative disadvantage in regard to revenues for education. These pupils, however, are still well below average in the state.

Ethnic and Income Composition Analysis. We examined the distribution of revenues among districts of different ethnic composition and found:

- In all cases, prior to reform, districts with high concentrations of Blacks were at or above average in the amount of revenue available for education.

Districts with relatively high percent Black enrollments in California Unified districts and Colorado were at a decided revenue advantage prior to reform. In other cases, they were average or slightly higher than average.

- Districts with high concentrations of Mexican American pupils were in most cases below average in revenues for education prior to reform.

Students in high percent Mexican American districts in Texas were worse off than any other subgroup we examined prior to reform.

- After reform, revenues for districts with high concentrations of Mexican American pupils increased in some cases, but decreased in others.

Revenues improved for pupils in high percent Mexican American districts in Texas and California elementary districts but decreased in California unified districts and, most dramatically, in Colorado.

- Before reform, pupils in districts with a high incidence of poverty were at an advantage in regard to revenues for education in some states and at a disadvantage in others.

Pupils in districts with a high incidence of poverty were receiving more revenues than the average pupil in Colorado and New Mexico; but pupils in high-poverty districts were receiving less than average in California elementary districts, Florida, and in Texas.

- After reform, revenue increases were experienced by pupils in high-poverty districts in California, Colorado and Texas. Revenue decreases for high-poverty districts were found in New Mexico and, to a lesser extent, in Florida.
- Districts with high concentrations of Native American pupils in New Mexico were at a revenue advantage before

reform, but lost most of that advantage after reform. As expected, federal revenues generally contributed more to the reduction in ethnic and income-realted disadvantages in revenues than did state aid.

Explaining Ethnic and Income-Related Disparities. For those cases in which significant associations were found between percent minority or poverty and revenue level, we endeavored to "explain" these relationships by removing the effects of district property wealth and urbanity. We found:

- In most cases, at least half of the association between percent minority or poverty enrollment and revenue level is explained by district property wealth.

The clear exceptions to this general finding are the relationship between percent Black and revenue level in Colorado after reform and between percent poverty and revenue in New Mexico both before and after reform. In each case, percent urban is a better explanatory factor in accounting for the relationship than property wealth.

- In some cases, a substantial proportion of the association between percent minority or poverty enrollment and revenue level can be explained by neither property wealth nor percent urban.

These cases include the following relationships: between percent Black enrollment and revenues in California unified districts; between percent Mexican American enrollment and revenues in Texas; and between percent poverty and revenues in New Mexico and Texas. Other explanatory variables should be explored in future research.

The Relative Importance of Wealth, Effort, and Need. Treating percent Black, percent Hispanic, mean family income and percent urban as indicators of greater educational needs, we examined the relative importance of district property wealth, local tax effort and need as factors accounting for the variation in revenue. We found that:

- Property wealth had the most important independent influence on variation in revenue both before and after the reforms were enacted.

This influence of property wealth was such that the larger the property tax base, the greater the amount of revenue available for education.

- In most cases, the influence of property wealth declined somewhat after reform, although the decline was usually slight.

New Mexico is the only exception. In that state, very little of the variation in revenues can be uniquely attributed to wealth--or any other factor included in the analysis. Other factors such as teacher education and experience, educational costs, etc., might be more important variables.

- Tax effort made an important contribution toward explaining variation in revenues both before and after reform in California, Colorado and Michigan.

We expected tax effort to play an important part in the guaranteed tax base systems in Colorado and Michigan, but not in the expanded foundation program in California.

- Each of the various need factors makes little or no unique contribution to explaining variation in revenue.

The large amount of overlapping variance indicates that some of the need factors in combination may account for additional variation in revenues. To untangle the interactions among these factors presents a challenge to future researchers in school finance equity.

A Concluding Caveat

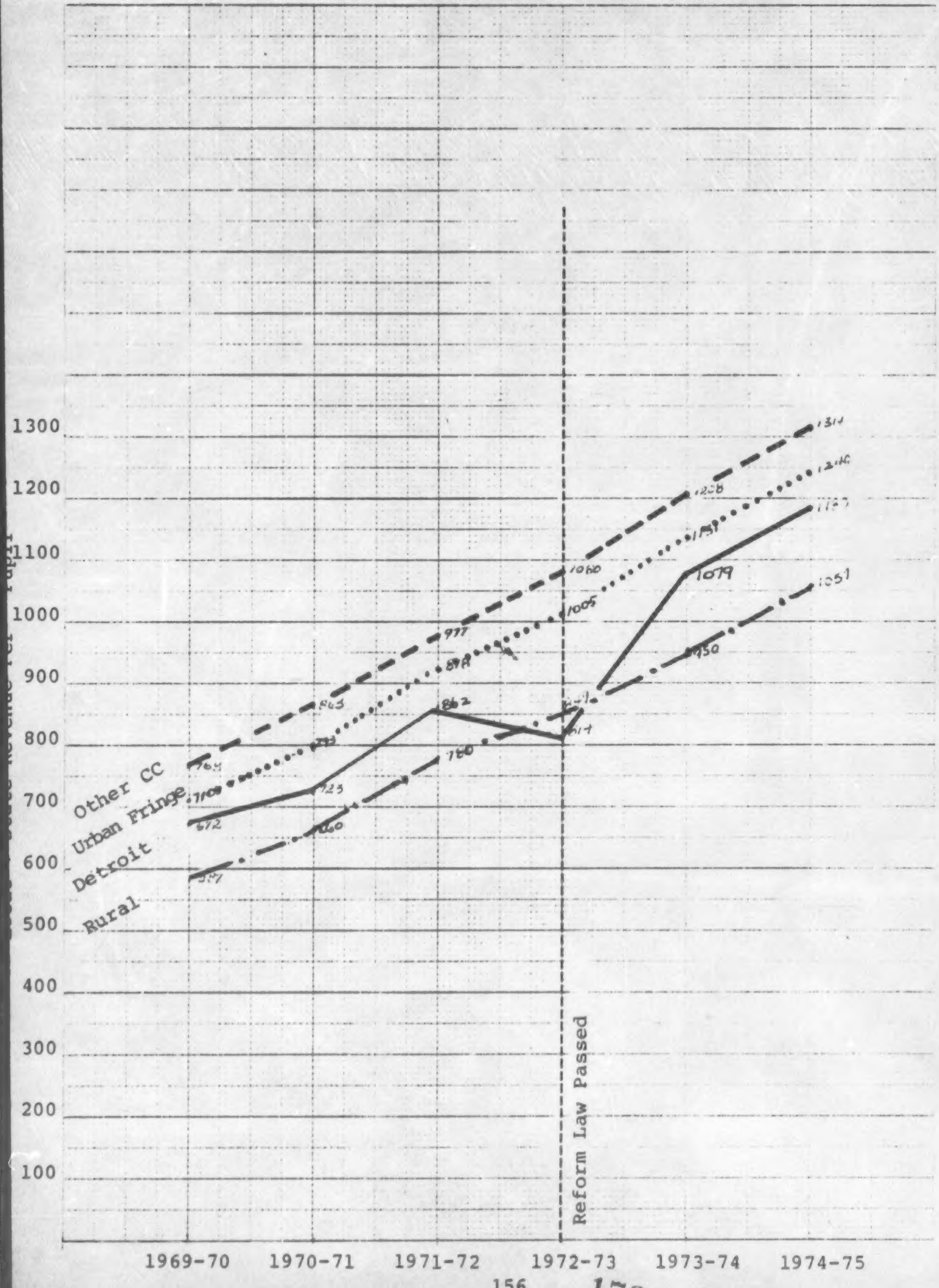
Generally, we found the reforms to have only a small influence on (1) minority or poor-related inequalities, (2) wealth-related inequalities and (3) inequalities overall. Of course, more time may be needed to allow for implimentation of the reforms before their full effects are recognized. In future research, data should be traced over a period of years both before and after the reforms to insure that changes from one year to the next are part of a pattern influenced by reform rather than temporary fluctuations due to contemporaneous factors. Michigan is a case in point.

Six years of data were obtained on Michigan school districts--four years prior to the 1972 reform and two years after the reform. The data indicated only a slight increase in revenue for education in the year immediately prior to implementation of the reform, and then a dramatic increase in the year after reform. At first blush this would seem to indicate that just as revenues for education were at a low ebb in Michigan, along came the Bursley Act of 1973 to rescue the schools of the state from impending financial doom.

More careful examination of the data (Figure 12) revealed that the decrease in revenue occurred only in Detroit school district and the change was limited to local revenue. Further inquiry indicated that this drop could be totally attributed to a reduction of 7.5 mills of local property tax in the Detroit City schools, where voters failed to vote the local millage in that year. The voters reinstated the 7.5 mills in the following year, bringing the revenue level back up to normal. Since Detroit accounts for approximately 15 percent of all students in the state and about the same proportion of the total property wealth of the state, the state average revenue was affected by this single event. Furthermore, since more than half of all Black pupils in the state are located in Detroit public schools, the difference between minority and non-minority group average revenues were affected considerably by Detroit's refusal to vote for the local millage in 1973-74. Aware of this anomaly, we were careful not to attribute such interethnic differences in revenues to the impact of the reform law.

Another interesting findings revealed in Figure 12 is that after we remove the Detroit anomaly, the average amount of revenue available for education in each of the community types follows a very consistent long-term trend which is not appreciably altered by the reform of 1973.

FIGURE 12: LOCAL + STATE REVENUE PER PUPIL BY COMMUNITY TYPE IN MICHIGAN: 1969 TO 1975



FOOTNOTES TO CHAPTER 3

1. John B. Mockler and Gerald Hayward, "School Finance in California: Pre-Serrano to the Present," Journal of Education Finance 4 (Spring, 1978), p. 389.

2. There was, however, a provision in the law which allowed recapture of some of the increases if a district spent more than 150 percent of the state average.

3. In New Mexico, Federal impact aid (PL 874) is included in local revenue throughout the tables in this volume because impact aid is treated that way by the state in determining the state equalization entitlement. For an examination of the effect of impact aid on the results of our analyses, see the New Mexico report, Volume 5.

4. Elementary and unified districts are treated separately throughout our analyses. High school districts, while fewer in number (N=115) than elementary districts (N=680), have coterminous boundaries. The high school districts were excluded from the tables in this report for the sake of efficiency and since minority and poor children were not clearly isolated by high school district boundaries.

5. The elasticity coefficient is computed by multiplying the slope from the regression by mean wealth per pupil divided by mean revenues per pupil.

6. When measuring the degree of conditional neutrality, we should be examining the regression coefficients or elasticities as well as the Pearson correlations or goodness of fit. These were examined and found to be closely related to the partial correlations in magnitude. It should also be noted that there may be other reasons for high correlations, such as systematic relationships between special needs and wealth. However, we have no evidence that such relationships exist.

7. Since data files made available to us did not separate Blacks from other minorities in Michigan school districts, all figures for Blacks in Michigan data are actually for all minority group members. This is not a serious shortcoming since 88 percent of all minority group pupils in 1973-74 were Black. Source: Michigan State Dept. of Education, School Racial-Ethnic Census: 1972-73, 1973-74, Lansing: Michigan Dept. of Education, Statistical Bulletin 4066, p.4.

8. The relationship between wealth and percent Spanish-background students is positive in Florida since most of the students of Spanish heritage are located in Dade County, a relatively wealthy, urban district.

9. Correlations among these variables can be found in individual state reports, Volumes 2-6.

CHAPTER 4

ETHNIC GROUP DISPARITIES WITHIN DISTRICTS: A SCHOOL-LEVEL ANALYSIS IN FLORIDA

The vast majority of statewide school finance studies conducted in the past relied on district-level data, just as we have done in the main body of the present study. However, at least some evidence exists that inequalities among schools within particular districts may be as great as inequalities found among districts. One feature of Florida's 1973 reform was the establishment of a standardized statewide accounting system to be used for individual schools. Under this system, school-level data have become available on a statewide basis for the first time. In this chapter, results will be presented from an analysis of school-level data from Florida, 1975-76. The overall goal of these analyses is to compare, on a statewide basis, results of school-level analyses with those of the more commonly used district-level analyses.

Within the context of the purpose stated above, three main questions will be addressed. First, differences among schools in expenditures and in concentrations of ethnic pupils will be compared with those among districts. Secondly, the relationship between ethnic concentration and expenditures at the school level will be compared with those relationships at the district level. Finally, statewide average expenditures for the various ethnic groups collected at the school level will be compared with expenditures among ethnic groups collected at the district level. Data available through the school-level accounting system make it possible to address a fourth question which could not be answered from the data available for the district-level analyses reported previously. This question concerns the extent to which pupils in the various ethnic groups are unevenly distributed across Florida's various educational programs (elementary vs. high school vs. special education, etc.)[1]

A detailed description was given in Chapter 2 of the methodology used in the school-level analyses. Therefore, such a detailed exposition will not be presented here.

Inequalities in Per-Pupil Expenditures

In this section, data will be presented concerning the magnitudes of disparities among schools in total per-pupil expenditures. These disparities will be assessed first by the standard deviations among schools of total per pupil expenditures. The standard deviation is a measure of how schools differ, on the average, from the mean total per pupil expenditure. Table 17 presents the standard deviation of total expenditures among schools for each of the eight educational program types and for the aggregation of all programs. For comparative purposes, standard deviations are also given which measure the variation of total per-pupil expenditures among districts. The coefficient of variation is another useful measure of the magnitude of disparity which exists among schools (or districts) in total per-pupil expenditures. This disparity measure has an intuitively appealing interpretation: if, for example, the coefficient of variation is .30, then approximately two-thirds of the schools (or districts)

TABLE 17

SCHOOL-LEVEL AND DISTRICT-LEVEL STANDARD DEVIATIONS AND COEFFICIENTS OF VARIATION OF TOTAL EXPENDITURES PER PUPIL - FLORIDA 1975-76

	Variation Among Schools		Variation Among Districts		District/ School Variance Ratio*
Program Categories	Standard Deviation	Coefficient of Variation	Standard Deviation	Coefficient of Variation	
All Programs	549	.453	372	.307	.46
K-3	390	.317	107	.087	.08
4-9	224	.201	84	.075	.14
10-12	288	.253	117	.103	.46
EMR	797	.389	413	.202	.52
TMR	1,124	.405	581	.209	.27
Phys. Disab.	3,458	.722	777	.162	.05
Social Disab.	1,940	.561	607	.176	.10
Gifted	1,501	.746	485	.241	.11

*Ratio of variance (standard deviation squared) among districts to variance among schools. All variance ratios, were found to be significant beyond the .05 level.

have total expenditures which fall within 30 percent of the mean. Table 14 presents coefficients of variation, for all grades and by program type, for total per pupil expenditures among schools and among districts. Both the standard deviations and the coefficients of variation are larger among schools than among districts. This is as it should be[2]. Of greater interest are the magnitudes of the differences in the measures between district-level and school-level data. It may be seen that, within each of the educational program types, the disparities among individual schools in total expenditures are much larger than those among districts.

The last column of Table 17 presents the ratio of the between-districts variance (standard deviation squared) to the total variance among schools. This measure is useful because it expresses the proportion of the total expenditure disparities among schools which appears (and may be examined) in district-level data[3]. It may be seen that, when the eight educational program types are combined, about one-half of the total variation among schools in total per pupil expenditures can actually be observed in district-level data. However, when individual program types are examined, the picture is quite different. In five of the eight program types, less than one fourth of the total variation among schools in per pupil expenditures is revealed in district-level data and in six of the program categories, only fifteen percent of the total between-schools variation can be observed using district-level data[4]. It is apparent that, within each of the educational programs, a great deal of variation appears among schools in total per pupil expenditures which does not appear in district-level data, and thus cannot be examined in district-level analyses. Much inequality among schools in expenditures is masked when district-level data are examined.

In the above discussion, we have seen that, for most of the program types, a great deal of the overall variation in total per-pupil expenditures which appears among Florida's schools does not appear in a district-level analysis. It should be noted, however, that some of the variation among schools within each district, is, in fact, reflected in the overall between-district variance. This point is elaborated on briefly in notes 2 and 3. Another related, but distinct, question is: How much variation among schools in total expenditures would remain even if all systematic differences among districts were eliminated? This question is of interest because most state public school finance systems are concerned with distribution of funds at the district level. The results presented here will indicate the extent to which differences among individual schools are likely to appear even if a state school finance system achieved perfect equality among districts, i.e., no systematic differences existed among the districts. Columns 1 and 2 of Table 18 present, respectively, the proportions of the total observed variation among schools which may be attributed to systematic differences among districts, and the proportion of this total between-school variation which would remain if no systematic differences were found among districts[5]. It may be seen that substantial amounts of the total between-schools variation

TABLE 18

PERCENTAGES OF SCHOOL-LEVEL VARIATION IN TOTAL PER PUPIL EXPENDITURES ATTRIBUTABLE TO INTER-DISTRICT DIFFERENCES AND TO INTRA-DISTRICT DIFFERENCES BY PROGRAM CATEGORIES IN FLORIDA, 1975-1976

	Percentage of Variation Attibutable to:	
Program Categories	Inter-District Differences	Intra-District Differences
K-3	7.5	92.5
4-9	14.1	85.9
10-12	16.6	83.4
EMR	26.9	73.1
TMR	26.7	73.3
Phys. Disab.	5.1	94.9
Social Disab.	9.8	90.2
Gifted	10.4	89.6

would remain (between 73% and 95%) even if all systematic differences among districts were eliminated. These data suggest that, if a state school finance system is to be truly equalizing among pupils, it must reach below the district level and make explicit provisions for funding in individual schools. Florida's FEFP has made a significant step in that direction with its requirement for statewide school-level accounting.

Ethnic Isolation

The next data to be presented will shed light on the extent to which students in the various ethnic groups are isolated from one another at the school level. Students of a particular ethnic group are highly isolated from other ethnic groups when a few schools (or districts) contain, as a very large proportion of their student bodies, students in the particular ethnic group, while most other schools (or districts) have very low proportions of pupils in the particular ethnic group. In contrast, pupils in the various ethnic groups have very little isolation from one another when most schools (or districts) have about the same proportions of pupils in the various ethnic groups.

From this conceptual definition of ethnic isolation, it may be seen that the standard deviation of the proportions of pupils in various schools (or district) provides a simple summary operational measure of ethnic isolation. Table 19 presents school-level standard deviations of the proportions of pupils in each of the three main ethnic groups in Florida -- Anglos, Blacks, and Spanish-background pupils. Standard deviations are presented

TABLE 19

SCHOOL-LEVEL AND DISTRICT-LEVEL STANDARD DEVIATIONS AND COEFFICIENTS OF VARIATION OF PERCENTAGES OF PUPILS IN VARIOUS ETHNIC GROUPS - FLORIDA, 1975-76

	School Level		District Level		Distric School Varianc Ratio*
Program Categories	Standard Deviation	Coefficient of Variation	Standard Deviation	Coefficient of Variation	
		Percent Anglo Pupils			
Overall	25.0	.360	16.0	.230	.41
K-3	25.9	.376	14.7	.213	.32
4-9	24.1	.346	15.9	.228	.43
10-12	22.3	.305	14.4	.198	.41
EMR	25.1	.767	14.2	.437	.32
TMR	22.1	.401	14.3	.255	.41
Physical	33.2	.632	13.3	.202	.16
Social	30.4	.546	13.9	.221	.20
Gifted	34.3	.432	7.9	.086	.05
		Percent Black Pupils			
Overall	21.4	.930	10.5	.450	.24
K-3	23.4	.987	8.9	.373	.14
4-9	14.8	.885	9.0	.396	.21
10-12	18.6	.915	9.0	.435	.23
EMR	26.6	.421	13.8	.215	.27
TMR	19.0	.526	11.8	.316	.39
Physical	22.1	.965	8.8	.348	.16
Social	24.8	.876	10.0	.337	.16
Gifted	13.3	2.676	3.6	.723	.07
		Percent Spanish-Background Pupils			
Overall	15.5	2.293	10.9	1.618	.50
K-3	15.1	2.273	10.1	1.540	.45
4-9	16.4	2.243	11.8	1.623	.52
10-12	13.9	2.373	9.9	1.675	.51
EMR	9.8	3.217	6.0	1.964	.37
TMR	13.6	2.238	11.0	1.649	.65
Physical	13.6	2.062	10.0	1.345	.54
Social	16.1	2.540	10.4	1.432	.42
Gifted	6.7	3.537	4.1	1.443	.37

* Ratio of district-level variance (standard deviation squared) to school-level variance. All variance ratios were found to be statistically significant beyond the .05 level.

for all programs combined and for each of the eight program types. For comparison purposes, district-level standard deviations are included. As with the total per pupil expenditure standard deviations presented above, one would expect the school-level standard deviations to be larger than the district-level values. Indeed, the school-level values are very much larger than the district-level values. School-level and district-level coefficients of variation are also shown for each of the program types. As before, these are directly comparable and have an intuitively appealing interpretation. Finally, Table 19 presents ratios of the district-level variances (standard deviations squared) to the school-level variances. It is apparent from these variance proportions that a great deal more ethnic isolation is found at the school level among Black pupils than revealed in district-level data. The variation in percent Black uncovered in district-level data ranges from seven percent to 40 percent the total school-level variation. It would appear that, even in districts with moderate proportions of Black pupils, which tend to be large urban districts (see Volume 4), most of the Black pupils are concentrated in only a few schools. In contrast, the district-level variation in percent Spanish-background pupils generally makes up a much larger percentage of the school level variation (between 37 percent and 65 percent). This is probably due to the fact that most of the Spanish-background pupils, both in number and percentage, are concentrated in Dade county. Most other districts have very low numbers and proportions of Spanish-background pupils.

Spanish-background students cannot be isolated in these other districts since there are too few Spanish-background pupils enrolled to make up a large proportion of any school.

Another way of examining the distribution of ethnic groups among schools and districts is to rank schools and districts according to their percent ethnic enrollment and look at the distributions directly. Table 20 presents percentile points of the statewide distributions of percentages of pupils in various ethnic groups, both for schools and for districts. Data from this table may be interpreted in the following manner: Consider the grades K-3, percent Spanish-background, school-level column. The number in the third row, 75.2, indicates that 20 percent (from the third row of the "percentile" column) of the Spanish-background pupils in Florida are located in schools which contain 75.2 percent or greater Spanish-background pupils. Consider, now, the District column for this ethnic group and program type. The number in the third row of this column is 28.6. Therefore, 20 percent of Florida's Spanish-background pupils are located in districts with at least 28.6 percent Spanish-background pupils. It may be seen, therefore, that Spanish-background pupils are found to be much more isolated from other pupils in K-3 program at the school level than one would suspect from district-level data.

When the data in Table 20 are interpreted in the manner described above, it may be seen that much more ethnic isolation exists at the school level than is found between districts. For example, better than 70 percent of the Spanish-background pupils in Florida

TABLE 20

PERCENTILE POINTS IN THE STATEWIDE FREQUENCY DISTRIBUTIONS OF PERCENTAGES OF PUPILS IN VARIOUS ETHNIC GROUPS - SCHOOL LEVEL AND DISTRICT LEVEL DATA FLORIDA SCHOOL DISTRICTS 1975-76

Percentile of Ethnic Group's Enrollment	Percent Spanish		Percent Black		Percent Anglo	
	School	District	School	District	School	District
Grades K through 3						
1	95.3	28.6	100.0	78.8	100.0	96.4
10	85.7	28.6	97.0	33.3	96.8	85.4
20	75.2	28.6	79.1	31.9	92.8	81.8
30	58.7	28.6	64.9	29.6	88.6	76.8
40	51.7	28.6	46.7	28.9	84.9	25.3
50	37.4	28.6	38.0	28.9	81.6	75.3
60	24.7	28.6	31.0	24.1	77.3	73.7
70	17.8	28.6	25.8	22.2	74.1	70.7
80	10.8	6.4	20.2	20.1	68.8	66.2
90	4.2	2.6	14.5	17.6	58.8	56.1
99	0.9	0.6	6.2	10.0	26.9	42.1
Grades 4 through 9						
1	97.8	32.7	100.0	79.1	100.0	97.3
10	89.7	32.7	82.5	33.6	95.9	87.8
20	77.4	32.7	62.9	32.3	91.9	82.7
30	63.1	32.7	48.2	28.4	88.2	78.9
40	54.8	32.7	38.3	26.7	84.2	76.5
50	43.0	32.7	33.1	26.7	80.1	75.4
60	31.8	32.7	28.0	22.1	77.1	74.9
70	21.5	32.7	24.5	20.7	72.9	70.8
80	12.7	14.7	20.1	19.1	67.8	64.9
90	5.3	5.0	14.4	16.7	38.7	54.5
99	0.9	0.7	5.6	9.2	29.0	40.1
Grades 10 throuth 12						
1	83.8	27.1	100.0	78.6	99.9	96.3
10	83.8	27.1	88.3	32.5	95.2	89.5
20	58.4	27.1	61.3	31.8	91.9	86.7
30	52.5	27.1	43.0	26.5	88.0	84.3
40	50.4	27.1	34.8	24.5	85.6	79.4
50	30.4	27.1	25.8	24.5	82.5	78.2
60	26.7	27.1	22.4	21.5	80.7	77.9
70	21.9	27.1	20.6	19.2	76.4	71.5
80	10.7	27.1	16.2	17.4	72.6	67.5
90	3.3	2.9	12.0	13.9	62.4	47.9
99	0.7	0.5	4.9	7.3	32.3	47.9

EMR

1	100.0	20.9	100.0	100.0	92.7
10	82.4	20.9	95.7	91.7	57.1
20	63.6	20.9	91.5	78.6	46.0
30	41.7	20.9	87.0	66.7	45.7
40	30.0	20.9	82.1	57.3	42.3
50	24.4	20.9	76.9	50.0	38.2
60	20.0	20.9	72.7	40.0	33.0
70	15.4	10.2	66.7	34.0	30.2
80	10.0	3.0	61.5	28.6	27.0
90	6.3	2.7	48.8	20.7	17.6
99	1.8	0.7	25.0	8.3	17.0

NOTE: This table presents percentile points in distributions of percentages which are weighted by numbers of pupils in the particular ethnic group. For example, the 50th percentile point of the Percent Spanish distribution, School Level K through 3, is 37.4. Therefore, 50% of Spanish pupils in K through 3 program are in schools containing 37.4% or more Spanish pupils.

are in Dade County, in which Spanish-background pupils make up about 30 percent of the total student population. However, 40 percent of Florida's Spanish-background pupils attend schools in which Spanish-background pupils make up a majority of the student body. Similar conclusions may be drawn concerning the distribution of Black pupils. Less than ten percent of Black pupils are located in districts where they make up a majority of the student population. In fact, better than 90 percent of Florida's Black pupils are in districts in which Blacks are less than 30 percent of district enrollments. However, at the school level, a third of the Black pupils attend schools in which they make up over 40 percent and, in some programs, over 50 percent of the total student body. These results confirm the conclusions drawn above from Table 20.

The above discussion suggests that, even in districts where they constitute only a moderate proportion of the total student population, pupils in minority ethnic groups tend to be concentrated in a few schools within those districts, rather than being evenly distributed among the schools. Table 21 presents data which will allow a direct examination of this hypothesis. In Table 21, percentile points are presented for the percent ethnic frequency distributions across schools within one district, Dade County. This district contains moderate proportions of both Black and Spanish-background pupils -- 27 percent and 33 percent, respectively. In addition, Dade County is by far the largest district in student population, and it contains 70 percent of the Spanish-

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TABLE 21

PERCENTILE POINTS IN THE FREQUENCY DISTRIBUTIONS OF PUPILS IN VARIOUS ETHNIC GROUPS FOR SCHOOLS WITHIN DADE COUNTY SCHOOL DISTRICT - FLORIDA 1975-76

Percentile of Ethnic Group's Enrollment	Percent Spanish	Percent Black	Percent Anglo
Grades K through 3			
1	95.3	100.0	93.5
10	86.8	100.0	89.7
20	80.4	99.5	84.5
30	68.9	88.7	79.9
40	62.7	79.1	76.4
50	55.0	75.2	72.7
60	45.0	68.0	63.9
70	35.7	48.6	54.4
80	24.4	36.2	45.6
90	16.6	19.4	31.7
99	6.1	5.2	9.7
Grades 4 through 9			
1	97.8	100.0	94.8
10	89.7	100.0	88.8
20	87.9	85.4	82.3
30	69.5	71.4	77.1
40	63.1	67.0	69.5
50	58.3	54.4	65.2
60	47.0	47.3	54.9
70	39.9	37.5	50.7
80	26.3	30.2	41.2
90	17.4	22.3	28.0
99	6.3	5.7	8.9
Grades 10 through 12			
1	83.8	100.0	86.8
10	83.8	100.0	86.8
20	83.8	82.7	82.1
30	58.4	64.9	76.7
40	52.5	58.3	72.4
50	50.4	45.0	66.3
60	30.4	35.2	56.8
70	27.5	22.4	59.6
80	26.7	16.2	46.7
90	15.3	13.7	37.2
99	5.5	8.1	19.0

EMR

1	100.0	100.0	100.0
10	100.0	100.0	75.0
20	82.4	94.3	66.7
30	70.0	90.3	61.9
40	50.9	87.5	57.1
50	38.9	83.3	48.8
60	28.6	80.0	30.2
70	23.8	71.1	23.7
80	20.0	62.5	18.5
90	11.5	53.3	12.5
99	5.7	19.0	4.8

NOTE: The following example illustrates how this table may be interpreted. The 50th percentile point of the distribution of Percent Spanish, K through 3, is 62.7. Therefore, 50% of the Spanish pupils in Dade County are in schools with at least 62.7% Spanish pupils.

background pupils in the state. It is apparent from this table that most Black and Spanish-background pupils in the state are located in schools in which their group constitutes a majority of the pupil enrollment, confirming the above hypothesis. It is also interesting to note that the amount of ethnic isolation tends to decrease for the 10 through 12 program. This is probably because elementary schools tend to be smaller and more neighborhood-oriented, while high schools tend to be larger and to draw students from a wider geographic area.

Expenditures by Ethnic Concentration

In this section, results are presented concerning the relationships between percentages of pupils in the various ethnic groups and total per pupil expenditures. Table 22 presents correlations between percentages of pupils in the ethnic groups and total expenditures. These correlations are presented for school-level and for district-level data within each of the eight program types. In addition, the slopes of the regression lines (b coefficients) are given for these relationships.

A comparison of the district-level and school-level relationships between percent Anglo pupils and total per pupil expenditures shows that, for the "regular" (K-12) and EMR programs, the school-level correlation is smaller in absolute value than the district-level correlations, although in the same -- usually negative -- direction. In general, it appears that schools and districts with lower proportions of ethnic minority pupils tend to have lower per pupil expenditures. The proportion of expenditure variation

TABLE 22

SCHOOL-LEVEL AND DISTRICT-LEVEL CORRELATIONS BETWEEN ETHNIC CONCENTRATIONS AND TOTAL PER-PUPIL EXPENDITURES FLORIDA 1975-76

	District-Level		School-Level	
Program Categories	Correlation	Regression Coefficient	Correlation	Regression Coefficient
PPE with Percent Anglo Pupils				
K-3	-.53**	-3.87	-.35**	-5.27
4-9	-.35*	-1.86	-.29**	-2.28
10-12	-.43**	-3.50	-.26**	-3.41
EMR	-.17	-4.81	.02	.56
TMR	-.24*	-9.66	-.19**	-9.65
Physical	.12	7.21	.05*	4.87
Social	.35*	15.26	.10**	6.28
Gifted	.26*	15.98	-.01	-.52
PPE with Percent Black Pupils				
K-3	.06	.72	.29**	4.83
4-9	.10	.95	.20**	2.31
10-12	.02	.24	.14**	2.21
EMR	-.11	-3.22	-.14**	-4.07
TMR	-.29*	-14.12	.00	.13
Physical	-.20	-17.55	-.09**	-14.83
Social	-.42**	-25.36	-.02	-1.51
Gifted	-.25*	-33.21	.00	.04
PPE with Percent Spanish-Background Pupils				
K-3	.74**	7.75	.15**	4.00
4-9	.40**	2.85	.12**	1.58
10-12	.61**	7.22	.23**	4.85
EMR	.64**	44.34	.24**	19.18
TMR	.62**	32.83	.34**	28.28
Physical	.02	1.73	-.02	-4.98
Social	-.11	-6.55	-.05*	-5.65
Gifted	-.36**	-42.67	-.02	-5.45

Significance Levels: * = < .01
** = < .001

attributable to ethnic concentration is lower in school-level data than in district-level data for these programs[6]. For the last three program types -- physically and socially handicapped and gifted -- the district-level correlations are larger than the school-level correlations as are the regression coefficients. This suggests that most of the variation among schools for these program types represents differences among districts. This result is not surprising, since many of the districts have only one or two schools with these special programs, and some districts have none.

For the first three "regular" programs, the correlation (and regression slope) between percent Black pupils and total per-pupil expenditures are close to zero for district-level data, while these are significantly large positive values for the school-level data. The district-level values are so close to zero because the relationship between these two variables is, in fact, non-monotonic at the district level. Large urban districts relatively high in property wealth tend to have moderate proportions of Black pupils, while small, rural, poorer districts tend to have either very low or very high proportions of Black pupils. As a result, districts with moderate proportions of Black pupils tend to have high expenditures, while districts with either very low or very high proportions of Black pupils tend to have lower expenditures. However, it was pointed out in the previous section that, even in districts with moderate proportions of Black pupils, those pupils tend to be concentrated in relatively few schools within those districts. Therefore, schools with high proportions of Black pupils are found in the large urban wealthy districts, as well as in the smaller rural district, and this results in the positive correlation between percent Black pupils and expenditures in the school-level analysis. This same kind of reasoning may be applied to the other program types with regard to percent Black pupils and total per pupil expenditures.

At the district level, the correlations (and regression coefficients) between percent Spanish-background pupils and expenditures are very large and positive. In contrast, these correlations are much smaller at the school level. This reflects the fact that 70 percent of the Spanish-background pupils in Florida are located in Dade County, a large, urban, wealthy district. The district-level correlation, in effect, compares Dade County with the rest of the state while the school-level correlation, in effect, looks at the relationship within Dade County.

Table 23 presents partial correlations between percentages of pupils in the various ethnic groups and total per pupil expenditures, controlling for differences among districts. These partial correlations may be viewed as being, in a sense, average within-district correlations. Partial correlations are not presented for the trainable mentally retarded, physical, social, and gifted programs because most districts have very few schools with these programs and some have none. The statewide school-level correlations (extracted from Table 22) are presented for comparison purposes.

It may be seen from Table 23 that the partial correlation between percent Anglo pupils and total expenditures, after controlling

TABLE 23

PARTIAL CORRELATIONS BETWEEN ETHNIC CONCENTRATION PER PUPIL EXPENDITURES CONTROLLING FOR DISTRICT DIFFERENCES FLORIDA SCHOOL-LEVEL DATA - 1975-76

Program Categories	Percent Anglo Pupils Zero Order	Partial	Percent Black Pupils Zero Order	Partial	Percent Spanish - Background Zero Order	Partial
K-3	-.35**	-.34**	.29**	.32**	.15**	.03
4-9	-.25**	-.23**	.20**	.22**	.12**	.01
10-12	-.26**	-.21**	.14**	.17**	.23**	.09*
EMR	.02	.09**	-.14**	-.13**	.24**	.06*
TMR	-.19**		.00		.34**	
Physical	.05		-.09**		-.02	
Social	.10**		-.02		-.05	
Gifted	-.01		.00		-.02	

Significance Levels: * = <.05, ** = <.001

for district differences in these variables, are almost as large as the first-order correlations between these variables for the three regular program types. The relationship between these two variables is as strong within districts as it is between districts indicating that important within-district differences exist. The same type of relationship may be seen between percent Black pupils and total expenditures. For these variables, the partial correlations controlling for between-district differences are slightly larger than the zero-order correlations. Again, it may be seen that important within-district differences exist among schools in Florida. For percent Spanish-background pupils, however, just the opposite is found. The partial correlations of this variable with total expenditures are much smaller than the zero-order correlations, and are close to zero in two of the program types. This is due, again, to the fact that most of the Spanish-background pupils in Florida are located in Dade County, a relatively wealthy district. As will be seen below, little relationship exists between percent Spanish-background pupils and total expenditures within Dade County.

Expenditures by Ethnic Concentration Within Districts

The partial correlations presented above allowed an examination of the "average" intradistrict correlations between percentages of pupils in various ethnic groups and total per pupil expenditures. In this section, correlations will be presented between these pairs of variables within particular districts. Table 24 presents correlations of percent Black pupils and percent Spanish-background pupils with total per pupil expenditures within each of Florida's

TABLE 24

WITHIN-DISTRICT CORRELATIONS BETWEEN PERCENTAGES OF PUPILS IN ETHNIC GROUPS AND TOTAL PER PUPIL EXPENDITURES - SCHOOL-LEVEL DATA - FLORIDA 1975-76

GRADES 4-9

District	Number of Schools	Mean Percent Black Pupils	Correlation With Percent Black	Mean Percent Spanish-Background	Correlation With Percent Spanish-Background
Central City SMSA					
Alachua	31	33	-.39	0	-.24
Brevard	64	13	-.02	1	.06
Broward	141	22	.22	3	.01
Dade	218	27	.24	33	.01
Duval	121	33	.30	1	-.19
Escambia	56	28	.47	1	-.19
Hillsborough	121	19	.25	5	.18
Lee	34	18	.14	3	-.09
Leon	30	32	.37	0	.05
Orange	94	20	.43	2	-.16
Palm Beach	83	30	.29	6	.15
Pinellas	104	16	.23	0	.02
Polk	77	20	.17	1	.01
Sarasota	20	10	.00	1	.09
Volusia	46	20	.10	0	-.02
Other SMSA					
Baker	4	21	-.15	0	-.95
Clay	14	6	.66	1	-.21
Nassau	9	16	.18	0	.09
Osceola	11	10	.07	1	.69
Pasco	19	4	.03	1	.15
St. Johns	13	25	.65	0	.13
Santa Rosa	21	6	.41	0	.06
Seminole	38	15	.45	1	-.33
Wakulla	4	21	.27	0	.10
City Between 25,000 and 50,000					
Bay	25	14	.12	0	-.11
Monroe	12	9	.04	16	-.20
St. Lucie	10	45	.36	1	.37

WITHIN-DISTRICT CORRELATIONS BETWEEN PERCENTAGES OF PUPILS IN ETHNIC GROUPS AND TOTAL PER PUPIL EXPENDITURES - SCHOOL-LEVEL DATA - FLORIDA 1975-76, GRADES 4-9 (continued)

District	Number of Schools	Mean Percent Black Pupils	Correlation With Percent Black	Mean Percent Spanish-Background	Correlation With Percent Spanish-Background
City Between 10,000 and 25,000					
Collier	19	8	.31	15	.03
Columbia	8	27	.32	0	-.84
Indian River	12	26	.19	1	.75
Lake	30	23	.08	1	.03
Manatee	27	19	.58	2	.23
Marion	27	28	.28	1	-.26
Okaloosa	33	9	.37	1	-.21
Rural (City Under 10,000)					
Bradford	7	21	-.30	1	.15
Calhoun	5	16	-.75	6	*
Charlotte	8	4	.47	1	-.59
Citrus	9	6	.33	1	.64
Desoto	4	25	-.44	2	-.44
Dixie	3	17	-.45	0	.93
Flagler	2	30	*	0	*
Franklin	4	20	.19	0	.71
Gadsden	14	79	.01	0	-.06
Gilchrist	2	7	*	8	*
Gulf	5	24	.09	0	*
Hamilton	5	45	.40	0	*
Hardee	5	9	-.02	17	-.07
Hendry	5	22	-.33	14	-.13
Hernando	6	13	-.54	1	.68
Highlands	9	23	.33	1	-.25
Holmes	6	2	-.30	0	*
Jackson	10	34	-.43	0	.43
Jefferson	2	69	*	0	*
Lafayette	1	14	*	0	*
Levy	7	26	-.28	1	.14
Liberty	3	15	.29	0	*
Madison	6	57	.20	0	*
Martin	10	20	.76	3	.76
Okeechobee	4	11	.21	2	-.73
Putnam	16	29	-.06	0	.22
Sumter	10	25	.08	1	-.26
Suwannee	4	23	-.29	0	.38
Taylor	5	25	-.90	0	.06
Union	2	23	*	2	*
Walton	9	13	.27	0	-.47
Washington	5	23	-.19	0	*

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*Correlation could not be computed because District contains no pupils in ethnic group or only one school with 4-9 program, or correlation is meaningless because district contains only two schools with 4-9 program.

NOTE Some schools omitted from analyses because student count, financial or both types of data were not available.

67 school districts for the grades 4-9 program. This program was selected because, for most districts, it is contained in more schools than the other programs. Correlations for this program are similar to those obtained for the other "regular" programs. Table 24 also presents the average percent Black and Spanish-background pupils in each district, as well as the number of schools in each district containing grades K-3 programs. In this table, the districts are organized by community type, ranging from central city SMSA districts to districts whose largest town has a population of less than 10,000. An examination of this table will show that several of the correlations could not be computed because the particular district had only one school with the K-3 program or because the district had no pupils in the particular ethnic group. Also, several of the correlations are not presented because the particular district had only two schools containing the program type, insuring the correlation was equal to unity as an artifact. Finally, it should be pointed out that a correlation has little meaning when a district has an extremely low mean proportion of pupils in the ethnic group involved.

It may be seen from Table 24 that, within the first four community types, the correlation between percent Black pupils and total expenditures is usually positive. This suggests that, within most districts, more money per pupil is usually being spent on schools containing greater proportions of Black pupils. However, within rural districts, the picture is less clear. The same positive correlation between percent Black pupils and total expenditures is found within many of the rural districts. Large negative correlations between percent Black pupils and total expenditures are found in many other rural districts. Within many rural districts, schools with higher proportions of Black pupils do not fare as well in expenditures as other schools. It also should be noted that large correlations are more likely to be attributable to chance in the rural districts, because those districts usually have considerably fewer schools.

Statewide Means Analyses

Another way of examining ethnicity-related expenditure inequalities -- in keeping with the methodology adopted in this study -- is to compute statewide mean expenditures for each ethnic group at the school and the district levels. Table 25 presents statewide mean expenditures for Anglo, Black and Spanish-background pupils utilizing school-level and district-level data for each of the eight program types. A two-way analysis of variance was performed in order to remove the effect of district differences in expenditures from the school-level means. District-level mean expenditures and school-level mean expenditures after controlling for district differences are presented in the table. In addition, eta^2 values are calculated for each set of ethnic group means. These eta^2 values measure the proportion of expenditure variation among schools (or districts) which may be attributed to differences among ethnic groups. They tell us by what proportion we can reduce the error in predicting expenditures given the knowledge of the number of pupils of each ethnic group in the school or district. In other

TABLE 25

SCHOOL-LEVEL AND DISTRICT-LEVEL MEAN PER PUPIL EXPENDITURE BY GROUP AND BY PROGRAM IN FLORIDA, 1975-76

	Mean Per Pupil Expenditure		
Ethnic Group	School Level	District Level	School Level Controling Dist. Difference
		Grades K-3	
Statewide	$ 1,229	$ 1,229	$ 1,229
Significance	***	*	***
Anglo	1,178	1,217	1,186
Black	1,341	1,232	1,344
Spanish	1,366	1,350	1,262
eta^2	.041	.094	.032
		Grades 4-9	
Statewide	$ 1,117	$ 1,117	$ 1,117
Significance	***	ns	***
Anglo	1,098	1,110	1,104
Black	1,157	1,120	1,156
Spanish	1,175	1,171	1,124
eta^2	.019	.035	.001
		Grades 10-12	
Statewide	$ 1,140	$ 1,140	$ 1,140
Significance	***	ns	***
Anglo	1,116	1,130	1,125
Black	1,177	1,140	1,178
Spanish	1,300	1,259	1,193
eta^2	.031	.067	.008
		EMR	
Statewide	$ 2,045	$ 2,045	$ 2,045
Significance	***	ns	***
Anglo	2,060	2,020	2,086
Black	2,003	2,040	2,012
Spanish	2,652	2,570	2,187
eta^2	.022	.051	.004

TABLE 25 (continued)

SCHOOL-LEVEL AND DISTRICT LEVEL PER PUPIL EXPENDITURE BY GROUP AND BY PROGRAM IN FLORIDA, 1975-76 (CONT'D)

Ethnic Group	Mean Per Pupil Expenditure School Level	 District Level	 School Level Controlling Dist. Differences
	TMR		
Statewide	$ 2,779	$ 2,779	$ 2,779
Significance	***	ns	***
Anglo	2,692	2,742	2,723
Black	2,776	2,724	2,848
Spanish	3,639	3,369	2,926
eta^2	.060	.074	.006
	Physically Disabled		
Statewide	$ 4,770	$ 4,770	$ 4,770
Significance	*	ns	***
Anglo	4,889	4,806	4,826
Black	4,472	4,732	4,588
Spanish	4,647	4,809	4,739
eta^2	.005	.002	.002
	Socially Disabled		
Statewide	$ 3,499	$ 3,499	$ 3,499
Significance	ns	ns	n.s.
Anglo	3,562	3,504	3,519
Black	3,424	3,372	3,482
Spanish	3,226	3,360	3,346
eta^2	.003	.012	
	Gifted		
Statewide	$ 2,005	$ 2,005	$ 2,005
Significance	ns	ns	n.s.
Anglo	2,003	2,021	1,986
Black	2,009	1,925	2,184
Spanish	1,882	1,775	2,131
eta^2	.000	.010	.002

Significance levels: * = .05, ** = .01, *** = .001

words, the eta^2 values indicate the relative importance of ethnicity in "explaining" (i.e., predicting) expenditure disparities within schools or districts. Statistical significance levels for the differences among the ethnic group means are also indicated on the table[7].

Within the three regular school programs (K-3, 4-9, 10-12), Spanish-background pupils uniformly receive the greatest mean expenditures, Anglo pupils the lowest expenditures, the Black pupils are in the middle at both the school and the district levels. However, at the district level, Black pupils are closer to Anglo pupils in mean expenditures, while at the school level, Black pupils are closer to Spanish-background students. It is not surprising that Spanish-background pupils fare the best. Since most Spanish-background pupils are located in Dade County, both district- and school-level analyses result in a comparison of the relatively property-wealthy Dade County district with the rest of the state. Once district differences are statistically removed, it can be seen that Blacks tend to be located in higher spending schools more than do either Anglo or Spanish-background students on the elementary level. In the previous section, this was shown to be the case for all but a few rural districts. Both Black and Spanish-background pupils were found to be in schools of significantly higher expenditure levels than Anglo pupils in grades 10-12 and TMR programs, but Blacks were found to be receiving less in EMR programs.

An examination of the eta^2 values indicates that while actual ethnic group differences in mean expenditures for the K-12, EMR, and TMR programs are larger among schools than among districts, ethnic group membership accounts for a lesser proportion of the total variation in expenditures among schools than among districts. This may be due to the fact that the total amount of expenditure variation is greater among schools than among districts. For the physically disabled, socially disabled and gifted programs, differences among the ethnic groups account for approximately one-tenth as much of the overall expenditure variation at both the school and district levels as the other programs. Also, the magnitudes of the mean differences are smaller than for the other programs and, with one exception, not statistically significant. This is particularly surprising since the level of expenditures is much higher for these programs than for most of the first five. In short, ethnic group membership is not an important determinant of expenditures in these programs at either the school level or the district level.

Ethnic Group Distributions by Program

The Florida Educational Finance Program (FEFP) of 1973 was designed as an exemplary weighted-pupil approach to funding education. It has been hailed by experts as a major pathbreaker in providing a system designed to fit educational programs to varied pupil needs. Ideally, under a program directed to meet pupil needs, individual programs would be tailored to fit individual pupil needs. Unfortunately, such an approach is considered to be beyond the practical limits of currently available resources. Instead, pupils are classified into categories according to needs which they share in common and programs are developed to meet those categories of need. In Florida, 26 different categories of pupil needs were identified and corresponding programs were funded under the FEFP according to full-time equivalent pupil weights based on the estimated costs of operating the various programs.

But developing a comprehensive set of pupil weights for funding different educational programs is only half of the weighted-pupil approach to providing for varied educational needs. The other half involves the sorting of students into appropriate educational programs and developing the criteria and procedures for the sorting process. Although our original research prospectus did not take us into the realm of the student sorting process (nor do our data allow such investigation), questions began cropping up concerning differences in the manner in which ethnic groups are distributed among the various educational programs. One of our concerns about the FEFP pupil counting system is that, while students are not sorted explicitly on the basis of race, the effect of the sorting may be to concentrate minority children in less advanced educational programs. The data available on ethnic pupil counts by groupings of educational programs allows us to examine this concern.

Our concern was based on the fact that sorting decisions may be made on the basis of any number of criteria, ranging from clearly identifiable physical disabilities to nominally objective measures such as aptitude tests, to more subtle subjective judgments of potential such as teacher evaluations. Misclassification is more likely if the judgment is subjective or if allegedly objective criteria are culturally biased. Furthermore, the chances of misclassification of special students increase along a continuum from severe physical handicaps to mild retardation, that is, as symptoms become more difficult to recognize[8].

Our general expectation is that minority pupils will be "overrepresented"[9] in "special education" type programs and "underrepresented" in programs for "gifted" students[10]. More specifically, we would hypothesize that Black students will be greatly overrepresented in those types of special education programs which involve "disabilities" which are mild and clearly identifiable as physical impediments--educable mentally retarded (EMR) and socially disabled programs; Blacks will be overrepresented, but to a lesser extent, in programs for disabilities which are more severe but do not necessarily involve recognizable handicaps--programs for the trainable mentally retarded; and Blacks will not be overrepresented in programs for the physically disabled. We hypothesize further that Blacks will be grossly under-represented in classes for the "gifted."

We hypothesize that Spanish-background students will not be over represented in the special education programs since they are from families of relatively high socioeconomic status. Many Spanish-background pupils are direct descendants of wealthy landowners and professionals who fled Cuba at the time of the 1959 revolution. However, the language differences of these second generation Cuban-Americans, we hypothesize, will be sufficient to systematically exclude them from their proportionate representation in the "gifted" classes.

Table 26 presents statewide data concerning the percentages of Anglo, Black and Spanish-background pupils in each group of educational programs and for all programs combined. The association between ethnic group membership and program participation was found to be statistically significant and sizeable. Anglo pupils are clearly underrepresented in the special education programs (EMR, TMR, physically disabled and socially disabled) and overrepresented in the gifted program. While some 92 percent of pupils classified as "gifted" are Anglos, Anglo pupils constitute only 70 percent of the total state enrollment.

By contrast, Black pupils are overrepresented in the special education programs. As predicted, Blacks are overrepresented to the greatest extent in programs for the educable mentally retarded (EMR), almost three times their proportionate concentration enrollment overall[11]. Blacks are also overrepresented in programs for the socially disabled, but to a lesser extent than was expected; there are one and one-third as many Blacks in socially disabled classes as would be expected from their proportion in the overall enrollment. Similarly, Blacks are overrepresented in classes for the trainable mentally retarded (TMR) by about 1.6 times their proportion in the total enrollment. A slight overrepresentation was also found among the physically disabled programs--1.2 times what was expected. And, as hypothesized, Blacks are poorly represented in programs for the "gifted" by about one-fourth of what one might expect from their proportion in the total student enrollment.

TABLE 26

PERCENT ETHNIC GROUP MEMBERSHIP BY EDUCATIONAL PROGRAM IN FLORIDA PUBLIC SCHOOLS, 1975-76

	Program Categories								
Ethnic Group	K-3	4-9	10-12	EMR	TMR	Physical Disabled	Social Disabled	Gifted	All Programs
Anglo	69.4%	70.1%	73.6%	33.1%	56.7%	64.0%	61.7%	92.1%	70.0%
Black	23.9	22.5	20.4	63.9	37.1	28.0	31.3	5.8	23.2
Spanish	6.7	7.4	5.9	3.1	6.3	8.0	7.0	2.2	6.8
Totals	100.0% (408,466)	100.0% (701,065)	100.0% (265,729)	100.0% (20,458)	100.0% (4,277)	100.0% (4,136)	100.0% (12,516)	100.0% (4,019)	100.0% (1,420,665)
All Pupils	28.8%	49.3%	18.7%	1.4%	.3%	.3%	.9%	.3%	100.0%

Chi Square = 19,350.4
16 degrees of freedom.

As predicted, Spanish-background pupils are underrepresented in the gifted program; only one-third as many of this ethnic group were found in gifted programs as would be expected from their proportion in the total enrollment for all programs combined. Curiously, Spanish-background students are underrepresented in EMR programs by less than one-half of what would be expected by random assignment. In other programs, Spanish-background pupils are represented in approximately the same proportion as they are found in the total student enrollment.

Analyses of the sort reported in Table 26 were conducted for each individual school district in Florida to identify districts with particularly high or low disproportions of minority pupils in special programs. In all but two of the districts, the association between ethnic group and program membership was statistically significant beyond the .05 level. Blacks were always found to be overrepresented in the special education programs and underrepresented in the gifted program.

To insure that these statistically significant associations were not due mainly to differences in ethnic enrollments among the "regular" programs, the K-12 programs were combined and the analyses were repeated within districts. Once again, in all but two of the districts, the association between ethnic group and program membership was found to be statistically significant beyond the .05 level.

Rather than present the full set of tables, three districts were selected which best exemplify the range of associations found between ethnic group membership and type of program[12]. Those selected were: Dixie County, in which one of the weakest (and statistically non-significant) associations was found between ethnic group and program membership; Dade County, the largest district in the state and one with a moderate association between ethnicity and program membership; and Liberty County, which had one of the strongest associations between ethnic group membership and type of program. The percentage (and numbers) of pupils from the various ethnic groups in each of the program types are shown for Dixie, Dade and Liberty Counties in Tables 27 through 29, respectively. It may be seen from these tables that, even in Dixie County, Black pupils are overrepresented in the EMR programs by at least twice their proportion in the district as a whole, a relatively small margin compared to most other districts. Also of note is the fact that Spanish-background pupils in Dade County--where 70 percent of all students of this ethnic group are located-- are underrepresented in the gifted program by almost one-fourth of what would be expected from their proportion of the total enrollment.

A closer examination of the associations between ethnicity and type of program for the various school districts in Florida reveals a clear pattern of overrepresentation of Black pupils in EMR programs in particular. Table 30 gives a district-by-district account of the percentage of Black pupils in EMR classes compared to their percentage of the total district enrollment. It can be seen from this table that Blacks are overrepresented in EMR programs in every district in the state, ranging from 11 percent to 563 percent more than their proportion in the school enrollment overall. For all but

TABLE 27

PERCENT ETHNIC GROUP FULL-TIME EQUIVALENT MEMBERSHIP BY EDUCATIONAL PROGRAM IN DIXIE SCHOOL DISTRICT, FLORIDA, 1975-76

	Program Categories							
Ethnic Group	K-3	4-9	10-12	EMR	TMR	Physical Disabled	Social Disabled	All Programs
Anglo	82.4%	83.3%	85.5%	66.8%	100%	62.5%	88.0%	83.1%
Black	17.6	16.6	14.2	33.2	-0-	37.5	12.0	16.8%
Spanish	-0-	.1	.3	-0-	-0-	-0-	-0-	.1%
Totals	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	(461)	(810)	(223)	(23)	(1)	(1)	(1)	(1,520)
All Pupils	30.3%	53.3%	14.7%	1.5%	.1%	.1%	.1%	100%

Chi Square = 7.68
12 degrees of freedom.

P > .80

TABLE 28

PERCENT ETHNIC GROUP FULL-TIME EQUIVALENT MEMBERSHIP BY EDUCATIONAL PROGRAM IN DADE COUNTY SCHOOL DISTRICT, FLORIDA - 1975-76

Ethnic Group	K-3	4-9	10-12	EMR	TMR	Physical Disabled	Social Disabled	Gifted	All Programs
	PROGRAM CATEGORIES								
Anglo	41.6%	39.9%	48.3%	17.5%	39.7%	39.2%	46.1%	75.7%	42.1%
Black	29.4%	26.8%	24.5%	62.2%	30.9%	30.4%	30.6%	16.2%	27.4%
Spanish	29.0%	33.2%	27.2%	20.3%	29.5%	30.4%	23.3%	8.1%	30.6%
Total	100% (66,898)	100% (118,813)	100% (46,613)	100% (1,772)	100% (656)	100% (769)	100% (3,245)	100% (742)	(239,544)
All Pupils	27.9%	49.6%	19.5%	.7%	.3%	.3%	1.4%	.3%	100%

Chi Square = 2855.53
14 degrees of freedom.

P < .001

TABLE 29

PERCENT ETHNIC GROUP FULL-TIME EQUIVALENT MEMBERSHIP BY EDUCATIONAL PROGRAM IN LIBERTY CO. SCHOOL DISTRICT, FLORIDA, 1975-76

	Program Categories						
Ethnic Group	K-3	4-9	10-12	EMR	Physical Disabled	Social Disabled	All Programs
Anglo	87.7%	84.9%	80.9%	43.6%	73.1%	58.8%	83.7%
Black	12.3%	15.1%	19.1%	56.4%	26.9%	41.2%	16.3%
Total	100% (270)	100% (400)	100% (137)	100% (26)	100% (2)	100% (6)	100% (840)
All Pupils	32.1%	47.6%	16.3%	3.1%	.2%	.7%	100%

Chi Square = 37.60
14 degrees of freedom.

P <.001

TABLE 30

Comparison of Percent Black Pupils Enrolled in all Programs and in EMR Programs in Florida Schools, 1975-76

School District	Overall Percent Black	Percent Black in EMR Classes	Difference (EMR-Overall)	Difference as Percent of Overall
Alachua	32.5	83.4	50.9	156.6
Baker	22.2	66.3	44.1	198.6
Bay	15.5	42.0	26.5	171.0
Bradford	23.0	67.9	44.9	195.2
Brevard	13.3	59.3	46.0	345.9
Broward	22.8	80.7	57.9	253.9
Calhoun	16.4	53.0	36.0	223.2
Charlotte	5.0	21.4	16.4	328.0
Citrus	7.7	34.9	27.2	353.2
Clay	7.0	46.4	39.4	562.9
Collier	9.3	43.5	34.2	367.7
Columbia	28.6	64.4	35.8	125.2
Dade	27.4	62.2	34.8	127.0
Desoto	26.7	57.3	30.6	114.6
Dixie	16.8	33.2	16.4	97.6
Duval	33.6	72.8	39.2	116.7
Escambia	28.2	56.9	28.7	101.8
Flagler	31.1	34.5	3.4	10.9
Franklin	19.9	66.8	46.9	235.7
Gadsden	79.0	94.4	15.4	19.5
Gilchrist	8.1	35.4	27.3	337.0
Glades	24.1	61.1	37.0	153.5
Gulf	26.7	76.7	50.0	187.3
Hamilton	46.6	71.8	25.2	54.1
Hardee	10.0	33.8	23.8	238.0
Hendry	23.9	68.1	44.2	184.9
Hernando	14.3	45.3	31.0	216.8
Highlands	25.4	71.2	45.8	180.3
Hillsborough	19.0	50.7	31.7	166.8
Holmes	3.0	7.1	4.1	136.7
Indian River	26.9	82.9	56.0	208.2
Jackson	35.4	79.0	43.6	123.2
Jefferson	69.6	100.0	30.4	43.7
Lafayette	13.4	34.8	21.4	159.7
Lake	23.2	67.9	44.7	192.7
Lee	17.6	54.8	37.2	211.4
Leon	33.2	87.1	53.9	162.3
Levy	27.3	67.4	40.1	146.9
Liberty	16.3	56.4	40.1	246.0
Madison	55.9	79.2	23.3	41.7
Manatee	21.0	61.7	40.7	193.8
Marion	29.5	71.7	42.2	143.1
Martin	21.3	71.7	50.4	236.6
Monroe	10.5	51.1	40.6	386.7
Nassau	18.5	48.5	30.0	162.2
Okaloosa	9.9	53.5	43.6	440.4
Okeechobee	11.8	26.2	14.4	122.0
Orange	20.6	66.1	45.5	220.9
Osceola	11.0	46.7	35.7	324.5
Palm Beach	30.7	73.4	42.7	139.1
Pasco	4.9	19.2	14.3	291.8
Pinellas	16.6	61.8	45.2	272.3
Polk	21.4	51.8	30.4	142.1
Putnam	30.6	72.4	41.8	136.6
St. Johns	27.1	70.1	43.0	158.7
St. Lucie	45.1	81.4	36.3	80.5
Santa Rosa	6.3	33.2	26.9	427.0
Sarasota	10.7	61.8	51.1	477.6
Seminole	15.7	68.5	52.8	336.3
Sumter	27.2	58.8	31.6	116.2
Suwannee	24.3	65.2	40.9	168.3
Taylor	26.4	73.2	46.8	177.3
Union	23.1	64.9	41.8	181.0
Volusia	21.8	67.0	45.2	207.3
Wakulla	22.9	52.8	29.9	130.6
Walton	13.7	33.3	19.6	143.1
Washington	24.0	49.5	25.5	106.3

seven of Florida's 67 school districts, Black pupils make up at least twice as large a proportion of the pupils in EMR classes as they do in the district student enrollment as a whole. The overrepresentation of Blacks in educable mentally retarded classes is a phenomenon that deserves further investigation.

Policy Implications of Sorting Students

School sorting is a two-edged sword. On the one side, it can be used to place pupils in those programs which more directly address their particular educational needs and abilities. On the other side, if students are misclassified and, as a result, minority children are overrepresented in less advanced school programs, then the sorting process is discriminatory and will likely have severe negative effects on the students. Misplaced students are denied equality of educational opportunity and unjustifiably stigmatized as inferior by virtue of being located in "special education" programs[13].

A California federal judge in Larry P vs. Riles (343 F Supp 1306 (ND Cal 1972)) restrained San Francisco Unified School District from administering IQ tests for the purpose of determining whether Black students should be placed in EMR classes because "the curriculum is so minimal academically, teacher expectations are so low, and because other students subject EMR students to ridicule on account of their status."[14] The court granted plaintiffs' claim that there in fact existed a "significant disproportion of blacks in EMR classes" since "while blacks constitute 28.5 of all students in the San Francisco Unified School District, 66 percent of all students in San Francisco's EMR program are black...."[15] Coincidentally, we found virtually the same disproportion of Blacks in EMR classes in Florida schools. Such extreme overrepresentation in EMR classes, on the face of it, smacks of sorting criteria which are either racially or culturally biased. If we can accept, as the court did, the assumption that there is a random distribution among all racial and ethnic groups of the qualifications necessary to participate in regular (as opposed to EMR) classes, namely, the abilities which allow pupils to learn at the pace at which those classes proceed, then an imbalance in ethnic student representation by program type can be interpreted as effectively, if not intentionally, a result of bias in the student allocation process.[16] IQ test results which frequently form the principal basis for decisions to place children into EMR classes have been found to be culturally biased and, hence, racially discriminatory.[17] Whether or not the procedures used to identify pupils for special education programs in Florida are culturally biased is beyond the scope of this study. However, the data presented in this chapter suggest that significant numbers of Black pupils in Florida may be misclassified as educable mentally retarded, a classification which is broad and ambiguous enough to allow any number of culturally biased decisions to be made in the placement process. Such wide disparities call for careful investigation into the student sorting procedures and practices.[18]

Summary

This school-level study was conducted with the original purpose of discovering the extent to which expenditure inequalities can be found among schools which are not revealed in district-level data. The schools data has allowed us to explore a number of additional issues: the extent of ethnic isolation on the school level which is masked by district-level data; the relationship between ethnic composition and per pupil expenditures at the school compared to district level of analysis; ethnic group differences in statewide mean expenditures derived from district-level and school-level data; and the distribution of ethnic groups among educational programs. With regard to expenditure inequalities, much more variation was found among schools than among districts. When all programs are combined, the between-district variance comprises slightly less than half the total variance among schools. Thus, much expenditure inequality is unrevealed in district-level budget data. Even if perfect equality in expenditures were achieved among districts in Florida, substantial variation among schools would still be found--between 73 and 95 percent of the total variation would remain, depending on the program category.

From an examination of ethnic isolation on the district and school levels, much more ethnic isolation was found at the school level than appears in district-level data. But while between-district variance in percent Black pupils enrolled is only one-fourth the total variance among schools, for percent Spanish-background, the between-district variance is one-half the total variance among schools.

An examination of the relationship between minority concentration and per pupil expenditures revealed that, for K-12 programs in the state as a whole, the greater the percentage of minority pupils, the greater level of expenditure. This positive relationship was found utilizing both district-level and school-level data. However, some deviations from this general pattern were found depending on the ethnic group, the level of analysis, and--for school-level data-- the locale of the district.

At the district level, the correlation between percent Black pupils and total expenditures is very low. This is because the relationship between these two variables is nonmonotonic--large urban, wealthy districts with moderate proportions of Black pupils tend to have greater expenditures, while smaller, rural districts with lower expenditures tend to have either very low or very high proportions of Black pupils. In contrast, schools with high proportions of Black pupils tend to have higher per pupil expenditures than schools with lower proportions of Black pupils. This type of relationship generally holds, except for rural districts. In a substantial number of these rural districts, the correlation between percent Black pupils and total expenditures is negative, i.e., schools with higher proportions of Black pupils spend less than districts with lower proportions of Blacks.

There is a strong positive correlation between percent Spanish-background pupils and per pupil expenditures at the district level. However, the school-level correlation between these two variables is very low. This difference is accounted for by the fact that most Spanish-background pupils are located in Dade County, a large, urban and relatively wealthy district.

The analysis of statewide mean expenditures for each ethnic group corroborated the findings in the correlation analysis. For the K-12 programs, average expenditures were lower for Anglo pupils in the state than for Blacks or Spanish-background pupils. The differences among ethnic group means are larger in school-level data than in district-level data. However, the proportions of total expenditure variation attributable to ethnic group membership is lower at the school level than at the district level. Apparently, factors unrelated to ethnic enrollment are more important in determining total per pupil expenditures at the school level than at the district level.

Finally, an investigation of the distribution of ethnic groups across programs revealed that Black pupils were found in far greater proportions in the "special education" programs than in the general student body, particularly in programs for the educable mentally retarded. The disparities in ethnic representation among the various educational programs were found to be significant in all but two of Florida's 67 school districts. Furthermore, Blacks and Spanish-background pupils are systematically underrepresented in programs for the gifted in Florida school districts.

FOOTNOTES TO CHAPTER 4

1. Because the different grade levels and special programs differ in per-pupil expenditures and because these programs are not evenly distributed across schools, separate analyses were conducted for eight different program types. These were kindergarten through grade 3, grades 4 through 9, grades 10 through 12, educable mentally retarded, trainable mentally retarded, physical handicaps, social handicaps, and gifted. The physically handicapped program actually refers to the aggregate of the physically handicapped, physical and occupational therapy, speech and hearing therapy, deaf, and two visually handicapped programs. Likewise, the social program subsumes two emotionally disturbed, the socially maladjusted, and two specific learning disability programs. Student ethnic count data were not available for the vocational and adult community programs; these programs were excluded from the analyses presented here.

2. The present data may be viewed as having come from an experiment with a one-way analysis of variance (ANOVA) design. In this design, schools function as "subjects" or observations, and districts function as levels of an independent variable, within which schools are nested. In such an ANOVA experiment, the total observed variation among schools may be partitioned into two conceptual or theoretical variances. The first reflects "true" or conceptual differences among districts, and the second reflects conceptual variation within districts. This second (within-district) variation reflects a common or "average" variance found among the schools within particular districts, the variation among schools which would be observed even if no true differences existed among districts. As any standard text on the ANOVA (see, for example, Winer,) will state, the expected value of the observed between-district variance is smaller than the expected value of the observed total variance among schools.

3. To further elaborate the discussion in note 2 above, it may be shown that the observed variance among districts is equal to a weighted sum of the conceptual variation attributable to true differences among districts and the conceptual within-district variation. Similarly, the total variation among schools is equal to the sum of these two theoretical quantities, although differently weighted. Therefore, the ratio of the observed overall variance among schools to the observed overall variance among districts provides a measure of the relative size of the total variance among schools which appears, or is included in, the observed variation among districts.

4. A great deal of variation exists among the districts in the extent to which special programs are operated. Therefore, much of the between-program variance which contributes to the overall expenditure variation is between-district variance. This may be why the between-district variance represents a greater proportion of the overall between-schools variance when all of the educational programs are combined than for the individual programs.

5. Strictly speaking, the proportions of overall between-school variation in total per pupil expenditures attributable to systematic district differences, which are reported in column 1 of Table 18 are eta^2s for between-district differences from a one-way ANOVA in which districts represent the various levels of the independent variable and schools are the observations or "subjects". Characteristics of this ANOVA design are described in notes 1 and 2 above. It should be again pointed out that the observed variation among districts includes both variation attributable to systematic differences among districts and variation attributable to the variation among schools within particular districts. The proportions in column 1 of Table 18 represent the amount of the total between-school variation attributable to systematic differences among districts, which could be eliminated through modification of the state funding system. The percentages in column 2 are equal to 100 minus the percentages in column 1.

6. However, in the K-3 and 4-9 programs, the school-level regression coefficients are larger than the district-level coefficients. This suggests that larger differences are found among schools with a given difference in percent Anglo pupils than among districts with the same difference. This, coupled with the fact that more variation exists among schools than among district in percent of pupils in the ethnic groups, indicates that, while a smaller proportion of the expenditure differences among schools may be attributed to differences in percent Anglo pupils, the actual magnitudes of the expenditure differences among schools attributable to differences in percent Anglo pupils are larger.

7. A caveat must be noted here. These significance levels can be misleading when comparisons are made between school-level and district-level results. Since Florida contains many times as many schools as districts, the school-level statistical tests are based on many times as many "cases" as the district-level analyses. Therefore, smaller mean differences are more likely to be statistically significant in the school-level analyses than in the district-level analyses.

8. Obviously, the determination of whether or not minority pupils are misclassified in special programs involves a judgment that cannot be made without adequate information about how many minority pupils should be so classified. We do not have that

information and thus will reserve judgment on the extent of misclassification until further research is conducted on the classification until further research is conducted on the classification process in Florida. We shall address ourselves only to the actual differences in ethnic representation within the various program groupings in comparison to the ethnic representation in the schools overall.

9. By "overrepresented" we simply mean represented in greater proportion than in the general population in the district or school.

10. "Special education" is used here to refer to those classes for students with various types of learning disabilities. The disabilities may range from physical impediments to social, psychological, or other learning disorders.

11. It is interesting to note that the same degree of over-representation of Blacks in EMR programs was found in California schools in 1972. See: California State Department of Education, Racial and Ethnic Distribution of Pupils in California Public Schools, 1972, as cited by Kirp and Yudof, Educational Policy and the Law, 1974, p. 657.

12. The indicator of strength of the association between ethnicity and type of program was Cramer's V, a measure of association for nominal-level data.

13. For a very thorough and thought-provoking review of the case law and some of the literature on equal educational opportunity and student classification, see: Kirp and Yudof, ibid., Chapter 7.

14. Ibid., p. 662.

15. Ibid., p. 664.

16. Ibid., p. 664.

17. For a sampling of the evidence, see: B. Hoffman, The Tyranny of Testing 1972, J. Franseth and R. Koury, Survey of Research Grouping as Related to Pupils Learning (U.S. Office of Education, D-HEW, 1966).

18. A thorough study of the tracking process in high schools, particularly the role of the counselor in that process, can be found in Aaron Cicourel and John Kitsuse, The Educational Decision Makers, 1963. Their study may provide a model for the type of research which is needed in order to evaluate sorting procedures and practices in Florida public schools.

CHAPTER 5

RECOMMENDATIONS FOR FUTURE RESEARCH ON EQUITY FOR POOR AND MINORITY PUPILS

Our research on school finance reforms has provided us with a sense of what is needed and what is possible in further research concerning the relatively unexplored terrain of equity for poor and minority children. Also, our experiences have made us aware of several important methodological issues in school finance research. This chapter discusses the substantive issues which we feel need to be investigated in school finance research, particularly with regard to poor and minority children. Our comments were prepared with an eye on the proposed research plan for the congressionally-mandated study of school finance. The definition of equity for pupils and taxpayers, the extent of ethnic isolation, the nature of the distribution of school revenues among poor and minority groups, the effects of social, economic and demographic trends on educational equity, and the federal role in achieving equity are explored in this chapter. Appendix B is added to address important methodological issues in school finance research, especially relating to research design, analysis and data collection. That appendix is more technical and should be of interest primarily to researchers who are planning to conduct studies and those who are evaluating research and research proposals.

The Cost-Quality Relationship

Perhaps the most basic question in school finance is that of the relationship between cost inputs and educational quality outputs. The unspoken (and sometimes spoken) assumption of such a relationship seems to run through much of the school finance research literature. This assumption becomes particularly apparent in the literature dealing with equity among pupils, i.e., the concept that pupils should receive different expenditures, depending upon their educational needs. Although the existence of a relationship between educational expenditures and quality of education outputs has a great deal of intuitive appeal, the empirical evidence concerning such a relationship has been mixed, at best.

In the preceding paragraph, we have spoken as though money is translated directly into educated pupils. Clearly, this view is a distortion of reality, and in the following discussion we will view this process as having two distinct stages which, to some extent at least, can be examined separately. The first of these stages is the translation of revenue into educational programs, and the second is the application of these educational programs to produce educated pupils.

For more than a decade, researchers in education have recognized sizable variations in cognitive achievement among racial, ethnic, and economic groups, and they have attemped to explain these differences based on differences in the educational programs available to pupils in these various groups. The massive U.S. Office of Education Study by James Coleman reported that "schools bring little influence to bear on a child's achievement that is independent of his background and general social context."[1] Subsequent studies have produced evidence both supporting and refuting Coleman's conclusions. After extensive research, Christopher Jencks reports: "We found no evidence that differences between schools contributed significantly to cognitive inequality nor were we very successful in identifying other specific genetic or environmental determinants of test performance."[2] George Mayeske's reanalysis of the Coleman data caused him to conclude that while schools are indeed important influences on student achievement differences, "their influence is bound up with that of the student's social background."[3]

These studies have not resolved with any degree of confidence the question of which (or even of whether) educational services can close the achievement gap between minorities and the dominant group. They leave us yet with the feeling expressed by Henry Levin more than a decade ago that "until better evidence is found, an air of agnosticism must prevail."[4]

The general approach used in the research cited above was that of large-scale surveys. This approach is valuable for identifying relationships which exist in general among this country's schools. However, if most schools are not using their educational revenues efficiently, i.e., are not using additional money to purchase effective educational programs (which would produce better students), then the minority of schools which are operating more effective educational programs are not likely to be detected. Another, more experimental, approach is useful for detecting such situations. In this approach, innovative educational programs are compared with more conventional programs by educating similar students with each program and comparing the achievement results.

As was mentioned above, we feel that the cost-quality relationship is fundamental to school finance research, and we propose the following specific research questions in this area:

- What is the general relationship between educational services and educational outcomes for students of minority and poverty groups?
- Are there particular instructional methodologies, techniques, or curricula--regardless of cost--which are most effective for these groups?
- What is the general relationship between educational dollars and the quality of educational survices provided to students, particularly poor and minority students?
- To what extent do additional state funds for existing educational programs buy better services for poor and minority children?
- To what extent does federal aid targeted for poor and minority children buy them better educational services?
- To what extent do better teacher salaries buy better instruction for students in a state?

Equality vs Equity for Pupils

As noted in Chapter 1 of our report, "equality of educational opportunity" is a "sponge concept" which has absorbed over the years so many different meanings as to render it virtually meaningless. Jack Coons noted in a recent comment that "equality,...

(b)eing essentially meaningless but broadly benign in tone, ... has permitted public education to proceed on a grand scale without the need for an identifiable purpose."[5] But recent research on "equality of educational opportunity," has made an important distinction between equality and equity.[6] An equal distribution is obtained when the same amount of some resource is allocated to each unit; in other words, equality refers to sameness. Few school finance reformers advocate that we should strive for the goal of equality. Instead, there is a general concensus that some standard of equity should be applied in reforming school finance systems. Equity in education requires that equals be treated equally but that unequals be treated unequally. A researcher studying equity in education is caught in the horns of a dilemma: while equity is what has been identified as the important focus of research, most of the measures which have been developed are measures of equality. The solution to this dilemma can be found only by returning to the empirical drawing board to develop more adequate measures of educational equity.

The task of developing equity measures requires that the equity goals of the educational finance system must be specified and a number of value judgments be made. As Berne[7] points out, at least three types of value judgments are essential to such a task. If unequals are to be treated equitably, we must agree upon the criteria for determining the nature of unequal treatment in concert with our equity goals, the extent of unequal treatment, and the manner in which unequal treatment will be measured.

None of these issues have been adequately grappled with in regard to equity for poor and minority children.

An implied goal of those advocating equity for poor and minority students is to narrow the educational achievement gap between racial, ethnic and economic minorities and the majority group in society. In other words, equal results, not equal inputs, seems to be the final criterion for determining whether equity has been achieved for poor and minority children. (Thus, the cost-quality relationship is assumed.) This goal does not advocate equality of results among individuals in society. Indeed, given the individual differences in native abilities and desired levels of achievement, a society with equal achievement would be both an unrealistic and an undesirable goal. Equality of average results between minorities and the majority group, however, is not such an unrealistic goal if one accepts the assumption that these groups are not different in native ability. Of course, as minority-majority group differences are diminished, the degree of inequality in achievement among individuals may be lessened particularly that portion of inequality which is due to environmental factors.

Research concerning educational equity among pupils involves both empirical and policy questions. We believe that the following questions are among the most pressing if equity, rather than simple equality,among pupils is to be the goal in school finance:

-What are the various educational needs of different pupil groups and how should they be prioritized?

-How much additional revenue should be spent to insure that a given unit of need is met in each state?

-How will the meeting of these educational needs be determined?

Taxpayer Equity

The above discussion concerned pupil equity--the reduction of inappropriate differences among students in availability of educational resources. Yet, in the recent wave of school finance reform in the courts and legislatures researchers have given at least as much attention to another form of equity--taxpayer equity.

Taxpayer equity has to do with equalizing differences in the local capacity to pay for education so that the tax burden is distributed fairly among taxpayers in a state. The problem is one which has plagued educational funding in most states since the local property tax was adopted as a major source of revenue for education. The guiding tenet of much of the reform legislation of the early 1970s was that state aid should be distributed in a manner that compensated for differences in district property wealth. Some of the reforms enacted a version of wealth equalization which allowed taxpayers to choose the level of spending in their local areas and equalized the capacity to spend with a "power equalizing" formula. Thus, for each mill of tax effort, a district is allowed to spend a given amount of extra dollars per pupil (above what the state gives each district in general revenue). If the district is unable to raise that given amount with one mill of effort, the state makes up the difference; if the district raises more than the given amount with one mill of effort, the difference is recaptured.[8] Such a formula is believed to be in compliance with the Serrano standard of "fiscal neutrality" and also believed to insure local control of the educational budget.

But do DPE formulas actually neutralize the local ability to pay for education? Furthermore, do they eliminate family wealth as a determinant of expenditures for education? Some studies indicate they may do neither.[9]

Economists tell us that understanding "tax-price" differences and their effects on local expenditures for education are essential to evaluating the impact of DPE systems.[10] The observed tax-price in a district is directly related to the percent of taxable property which is residential. That is, if a school district's tax base is one-tenth residential, the cost to the taxpayer-residents of raising a dollar in local property taxes is actually only ten cents; whereas, the cost to taxpayer-residents of raising a dollar in a district with a tax base which is 90 percent residential is nine times as great. Thus, the residential composition of a school district is posited as an important influence on the local tax-price of education to residents.

Wade shows that "so long as school districts respond to tax price differentials, DPE will not neutralize the tax system's influence on local school expenditures."[11] He found that the real effect of DPE grants is not to neutralize the local tax system's impact on spending but rather to create a system which guarantees, in those states in which commercial and industrial property is found in low-income areas, that a district which is poor in terms of family income will experience a lower tax-cost for education than a higher income district. "What DPE guarantees is that school districts with the same family wealth, as measured by per pupil residential value, will have the same tax price, and this tax-price will rise as the per pupil value of housing rises."[12]

An influence on local spending which is not intended to be neutralized by DPE formulas is the preference for additional educational services. Preference for additional educational services is often found to be directly related to the income level of district residents.[13] To complicate analyses further, the tax-price and preference differences may offset one another's influence on spending if the more residential areas are also the high-income areas. The interaction of these factors must be considered when evaluating the effects of DPE systems.

Finally, future research should examine the nature of the relationship between funding arrangements which are primarily designed for achieving taxpayer equity and those which are concerned chiefly with pupil equity. Conceivably, the goals might work at cross-purposes with one another. If, for example, a wealth-equalizing formula were adopted, but no provisions were made for differences in pupil needs, the pupils with special needs in districts which are above average in district wealth would stand to lose out on such an arrangement. Indeed, our own research as well as that of others has shown that poor and minority children are not predictably located in property-poor school districts in every state. The exact relationship between minority status or personal income and property wealth is an empirical question that must be answered state-by-state.

With these issues in mind, the following questions are offered for further investigation into taxpayer equity matters:

- What is the relationship between personal and property wealth?
- What is the relationship between district property wealth and concentration of poor and minority taxpayers? Poor and minority pupils?
- How is the tax burden distributed among racial, ethnic and income groups?
- To what extent does the composition (percent residential) of the tax base of a school district determine the disparities in spending among districts?
- To what extent are taxpayer equity solutions compatible with pupil equity solutions?
- Have DPE solutions reduced the relationship between district property wealth and spending in each state?
- Have DPE solutions reduced the relationship between personal wealth and spending in each state?

Defining "Ability to Pay"

A research concern which should be addressed as part of the taxpayer equity issue is the problem of arriving at a valid indicator of local ability to pay for education. The most frequently used index of a community's ability to pay is the school district's tax base or property wealth. Information on the total assessed valuation of property by school district is available in each state. The problem for the researchers is that it is not always clear just what the assessed valuations mean in a particular state and how they must be manipulated in order to get estimates of true market value of property. Frequently, assessed-sales value studies have been conducted to provide a ratio of assessed to market value for each district. This was required in five of the six states included in our research. Other states, such as Texas, offer market value estimates which vary considerably in their accuracy from district to district.

Since assessment practices frequently change from one year to the next, longitudinal research becomes particularly difficult to interpret. Changes in equalized valuations and equalized tax rates may be due to alterations in assessment practices as well as to actual wealth or tax effort shifts; unfortunately, it is impossible to separate the effects of these two influences. Research into the consistency and accuracy of property appraisal practices among districts within each state is needed to alert the school finance researcher to the validity and reliability of the property value estimates and to assess the comparability of these estimates across states. Of course, such research would be a massive undertaking if it involved a thorough examination of the validity of property appraisal and assessment practices even in a single state and more massive if it were to be a national study. But federal guidelines have been set for evaluating the extent to which a state's distribution formula is wealth-equalizing. So too, guidelines for determining the extent of consistency in property appraisal and assessment practices might be formulated and may provide an incentive for states to achieve much-needed property tax reforms.

Another indicator of local ability to pay for education is the personal income of district residents. Some school finance experts argue that income is an even better indicator of actual fiscal capacity than is property value.[14] Others have advocated combining income and property wealth in determining a district's fiscal capacity. Some states have included income as a factor in their equalization formulas.[15] In short, it is becoming increasingly apparent that income is now viewed as an important data item by both researchers and policymakers.

Unfortunately, the only source of income data by school district for all states is the decennial census. Fifth count summary tapes are available by 1974-75 school district boundaries for all districts with 300 or more pupils enrolled. These data are limited in a number of ways. First, the data are based on 1969 income estimates which by now are quite dated. Second, census data on income are based on a 20 percent sample of households and, therefore, are estimates. Third, because of the greater sampling error in smaller areas, coupled with the fact that school districts are not always coterminous with census enumeration districts, mapping census data by school district boundaries was not attempted for districts with less than 300 pupils. Thus, approximately one-fourth of all school districts in the country are excluded from the income data set altogether. While these districts contain only about two percent of the total student enrollment, they are districts which differ in a number of important respects from the other, more urban, districts.

More current income by school district boundaries are available in particular states. A national survey by the Educational Policy Research Institute revealed that income data are now available by school district in 17 states. Another 20 states collect some form of income data by jurisdictions within the state other than school districts.[16] The problem with these data, of course, is that school districts are seldom coterminous with the cities, towns or counties for which the income data are available. For the 17 states which collect income data by school district or by jurisdictions coterminous with school districts, individual and some comparative state studies utilizing these data may be conducted. However, a national study utilizing income data will have to await the results of the 1980 census. Plans are being made to map income data for all school districts since more complete sampling will be conducted in rural areas. These data will not be available until after 1982.

Some of the questions which deserve to be investigated in regard to local fiscal capacity include:

- What is the relationship between tax assessments and the actual market value of property in each state?
- How is fiscal capacity best defined to fit the district ability to pay for education in each state?
- How is fiscal capacity best defined to fit the district residents' ability to pay for education in each state?
- Which of the indicators of fiscal capacity or which combination of incidators constitute the best predictor of

spending among districts in each state?

Distribution of Poor and Minority Students

Preliminary to examining the relationship of poor and minority concentration in school districts to district wealth or spending, a careful examination of the distribution of these pupils must be made. If very little variation in the percent minority or poverty pupil enrollment is found, the analysis of their relationships with other variables would be a waste of time. We found, for example, that almost three-fourths of all Spanish-background students in Florida are located in Dade County district and that no other districts have high concentrations of this ethnic group. Consequently, the analyses relating ethnic concentration to educational resources were simply an indication of the differences between Dade County and the remainder of the state. Even more difficult to analyze are those states where the percent of a particular ethnic or income group of district enrollment is low and approximately the same among districts throughout the state. In these cases, where ethnic isolation does not occur by school district boundaries (although such isolation may exist among schools), the only recourse is to abandon district-level analysis and try to obtain data for analysis at the school-site level. Our school-level analyses in Florida revealed four times as much variance in percent Black pupils and twice as much in percent Spanish among schools as was found among districts. If, on the other hand, there is considerable ethnic or poverty group isolation by school district boundaries, a clearer picture of the differences in resources among ethnic or income groups can be drawn. In Texas, over 60 percent of the Chicano pupils are in districts where they constitute a majority of the student enrollment. As a result, the analyses were considerably more interesting and a clear statement could be made concerning differences in spending among ethnic groups.

Questions which should be asked in regard to minority and poverty pupil distribution include:

-To what extent are minority (or poverty) pupils concentrated in schools and districts with high percentages of their own group in each state?

-To what extent are minority (or poverty) pupils concentrated in a few schools or districts with large numbers of their own group in each state?

-How are minority and poverty studetns distributed among school districts and states in the nation as a whole?

Distribution of Educational Resources Among Minorities & Poor

The heart of our own research has been the distribution of educational revenues among racial/ethnic and income groups and the changes which have occurred in that distributional pattern as a result of the various "reform laws" passed in six states. We learned that these patterns were not always consistent from one state to another and that further investigations should be conducted state-by-state before generalizations are made about the nation as a whole. For example, we found that while Chicano pupils are disadvantaged with respect to revenue for education in Texas, the same disadvantage is not characteristic of Chicanos in New Mexico.

We also learned that, if analyses are to be conducted on the impact of school finance systems on particular pupil populations in some states, they will have to reach down to the level of the school for a more precise tracking of funds. This is necessitated by the fact that minority and poor children are not always isolated from the majority pupils on the district level. Schools tend to be more homogeneous with respect to racial/ethnic and poverty composition. This problem will be discussed in more detail in the section on methodological issues.

A third lesson to be passed on to those conducting research on the impact of school finance systems on poor and minority students is that the equity effects of reforms are either incremental changes which do not come all at once or they are very small. In order to ascertain which is the case, data must be collected on an annual basis over a longer period of time. Approaches for looking at such long-term trends are discussed in the methodology section.

Future research should attempt to measure the distribution of educational resources that revenues buy as well as the distribution of revenues by source. Ideally, revenues and resources should be expressed per unit of need (i.e., per pupil weighted by need) rather than per pupil. The following questions should be addressed in this research:

- How are local, state and federal revenues distributed on the average among racial, ethnic and income groups in each state over time?
- How are local, state and federal revenues distributed among schools and districts of different minority and poverty concentrations over time in each state?

- How are educational resources (e.g., qualified teachers) distributed on the average among racial, ethnic and income groups in each state over time?
- How are educational resources distributed among schools and districts of different minority and poverty concentration over time in each state?
- To what extent is the relationship between educational revenues from local and state sources and ethnic (or poverty) concentration a function of district property wealth and community locale?

The details of the procedures involved in the conduct of research on these questions are given in Appendix B on "Methodological Issues in the Conduct of School Finance Equity Research".

Social, Economic & Demographic Influences on Educational Equity

A school finance system does not operate in a vacuum. There are countless social, economic and demographic factors which influence educational resource distribution. Some of these factors represent seminal trends, others are more contemporaneous. Changes in the age structure of a population are manifested in declining enrollments. Inflation affects the willingness and ability of taxpayers to pay for additional educational services and construction of new buildings. Anglo out-migration from central cities alters the residential tax base. Busing and consolidation change the racial composition of schools. Transfers to private schools undermine local support for public education. Some of these factors operate in concert to affect equity in educational funding.

Some of the questions which are in need of investigation are as follows:

- What are the trends in enrollment among racial, ethnic and income groups in each state?
- What have been the fiscal effects of declining enrollment on schools of different ethnic composition in each state?
- To what extent have district consolidations reduced spending disparities?
- To what extent have district consolidations reduced minority isolation?
- What is the relationship of busing to transfers of whites to private schools?
- What have been the effects of white transfers to private schools on district tax rates and spending?
- What have been the effects of "white flight" to the suburbs on fiscal capacity, tax rates, and educational expenditures?
- What is the relationship between changes in racial and ethnic concentration in schools and white transfers to private schools?
- To what extent do changes in local spending correlate with changes in the economic cycle or inflation?

Federal Role in Achieving Equity for Poor and Minorities

The Federal role in achieving equity in funding education seems to be an increasingly important one. In addition to providing categorical aid for pupils from poverty families, the handicapped, and those with limited English proficiency, the Federal government has begun to offer incentives for reducing wealth discrimination in state funding schemes. By setting equity guidelines for allocating federal impact aid, Federal policy has moved into the realm of equity monitoring within state school finance systems. Future research should examine the effects of these federal programs and policies.

The important questions to be addressed in these research efforts are:

- How have federal categorical funds been used by states and their local education agencies? Have federal funds been used on programs designed specifically for poor and minority children? To what extent have federal revenues replaced state and local revenues for poor and minority pupils?

- What would be some of the problems associated with targeting federal categorical revenue to schools rather than districts?

- What effect has the increasing Federal role in funding education for poor and minority children had on local control?

- What effect have the Federal categorical programs had in regard to equity for poor and minority children? In regard to taxpayer equity?

- What has been the effect of Federal guidelines encouraging equity in state funding systems?

- Does Federal impact aid only make up for lost local revenue or is it a "windfall" for districts receiving it? Or is it not sufficient?

- Does Federal impact aid contribute to greater pupil equity? To greater taxpayer equity? In terms of overall equity goals, could impact aid be spent in more equitable ways?

- What should be the Federal policy regarding aid to predominately Indian schools? Are current federal programs supporting Indian education sufficient?

- What should be the federal policy regarding education for the alien child? Should the federal government guarantee a free education for illegal alien children? Should impact aid be provided districts with alien children?

The question of our federal policy toward the education of illegal immigrants deserves special attention. The issue of whether or not illegal alien residents of school age should be denied access to free public education is now in litigation. While a state civil appeals court has upheld the constitutionality of a

1975 Texas law expressly excluding illegal alien children from a tuition-free education,[17] a federal district court judge in Tyler, Texas, recently declared the law unconstitutional as applied to Tyler ISD on equal protection and due process grounds.[18]

The court pointed to studies indicating that alien residents, regardless of their legality, support education through the state sales taxes and local property taxes they pay, either directly or indirectly.[19] Additional survey research is needed to document the extent of tax support for education from illegal alien residents.

Officials of the Houston Independent School District estimated that as many as 8,000 undocumented children may be residing in that district and that a court order allowing them to attend school without paying tuition could cost the district an additional $10 million.[20] Attorneys for the excluded alien children argued that the additional costs would only be marginal and may not be felt at all against the tide of declining enrollment in that district. Further research is needed on the marginal costs incurred in the education of illegal alien children and how much would actually be saved by excluding them.

A related issue concerns the cost of not educating illegal alien children. Sociologist Gilbert Cardenas estimated that 60% of all legal Mexican immigrants had at one time been in this country illegally.[21] If today's illegal aliens are tomorrow's legal residents, a policy excluding illegals from free education altogether might be penny wise, but it clearly would be pound

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foolish. Admittedly, this is a difficult area for research, but public policy will undoubtedly be made in this area in the very near future and whatever information can be gathered will be invaluable.

Two bills are currently being considered in Congress which would allocate federal aid to school districts with large numbers of legal immigrant children. One education finance expert has called for federal aid for illegal alien children similar to impact aid aimed at relieving the problems caused by concentrations of Federal employees.[22]

A New Dimension for Future Research

Much of the research on the reforms of the 1970s has been concerned with measuring either equalization of expenditures or fiscal capacity. We learned from our research that studying equity for poor and minority children in school finance will require the addition of another dimension to the concept of equity which takes into consideration the various educational needs of different pupil groups. Future research should go beyond considerations of simple equality and fiscal neutrality to a vertical concept of equity which requires that unequals be treated equitably, that is, in accordance with their educational needs. To do this will necessitate a return to the drawing board and designing some basic experimental research on the most effective instructional strategies in accordance with the educational needs and cultural backgrounds of different racial, ethnic and income groups in our society.

FOOTNOTES

1. James S. Colemen, *et al.*, *Equality of Educational Opportunity*. (Washington, D.C.: U.S. Government Printing Office, 1966), p. 325.

2. Christopher Jencks, *et al.*, *Inequality: A Reassessment of the Effect of Family and Schooling in America*. (N.Y.: Basic Books, 1972), p. 254.

3. George Mayeske, *et al.*, *A Study of Our Nation's Schools* (Washington, D.C.: U.S. Office of Education, Dept. HEW, 1972), p. ix.

4. Henry M. Levin, "What Difference Do Schools Make?" *Saturday Review* (January 20, 1968), p. 67.

5. John E. Coons, "Can Education Be Equal and Excellent?", *Journal of Education Finance* 4 (Fall, 1978), p. 152.

6. The distinction between "equality" and "equity" has been made in much of the recent literature on school finance reforms. See, for example: Robert Berne, *Equity and Public Education: Conceptual Issues of Measurement*, *Working Paper #4, Graduate School of Public Administration*, New York University, New York, N.Y. October, 1977, pp. 2-3.

7. Berne, *Equity and Public Education*, *ibid*., p. 2-3.

8. Coons, "Can Education Be Equal and Excellent?', pp. 147-148.

9. See: Jerry Wade, "School Finance Property Tax Reform: Its Role in Neutralizing Family Wealth as a Determinant of Expenditure Differentials," Paper presented at 1975 Annual Meeting of the Southwestern Social Science Association, March 26-29.

10. *Ibid*, p. 3; Bowman, *National Tax Journal* (June 1974).

11. Wade, *ibid*., p. 5.

12. *Ibid*., p. 7.

13. *Ibid.*, p. 4.

14. Richard J. Coley, A *School Finance Researchers' Guide to Personal Income Data for the 50 States*, Princeton, N.J.: *Education Policy Research Institue of* the Educational Testing Service, December, 1978. p. 1

15. Some of the states which combine income and property wealth in estimating local fiscal capacity are Kansas, Maryland, Missouri and Illinois.

16. Coley, *A School Finance Researchers' Guide*, p. 2.

17. *Hernandez v. Houston ISD*

18. *Doe v. Phyler* 47 U. S. Law Week 2205 (E.D. Tex. Tyler Div. Sept. 14, 1978).

19. *Ibid*., pp. 2205-2206.

20. Jorjanna Price, "HISD Says Ruling Could Cost $10 Million If Applied Here, *Houston Post* (Sept. 15, 1968), p. 1-A

21. Cited by Jose A. Cardenas, "The Education of Illegal Aliens", *IDRA Newsletter* (January, 1978), p. 8.

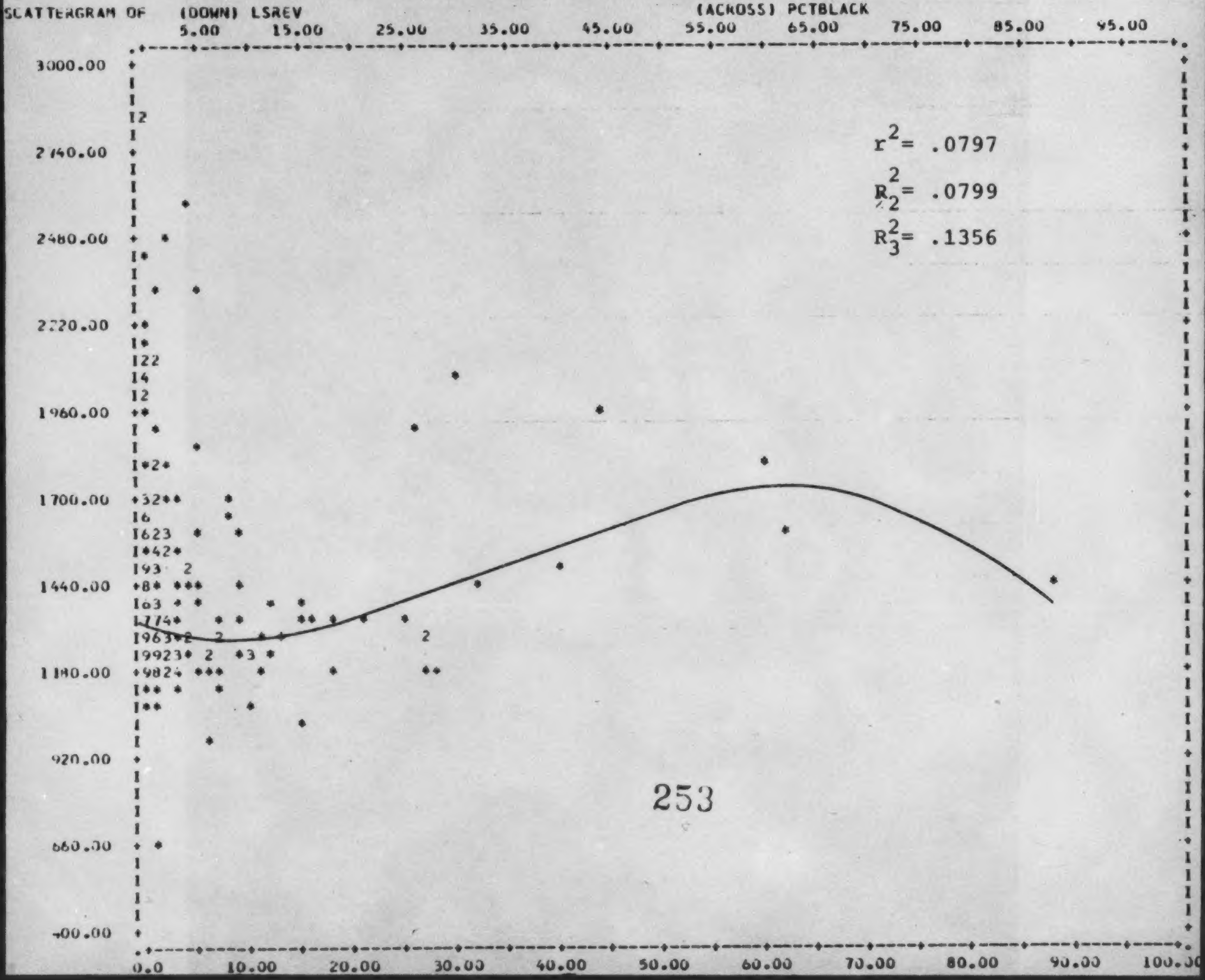
22. *Ibid*., p. 8.

APPENDIX A

SCATTERGRAMS RELATING ETHNIC COMPOSITION TO DISTRICT WEALTH AND REVENUE IN SIX STATES

FIGURE 13

CALIFORNIA UNIFIED DISTRICTS:
LOCAL + STATE REVENUE PER PUPIL WITH PERCENT BLACK PUPILS, 1975-76



CALIFORNIA UNIFIED DISTRICTS:
LOCAL + STATE REVENUE PER PUPIL WITH PERCENT MEXICAN-AMERICAN PUPILS, 1975-76

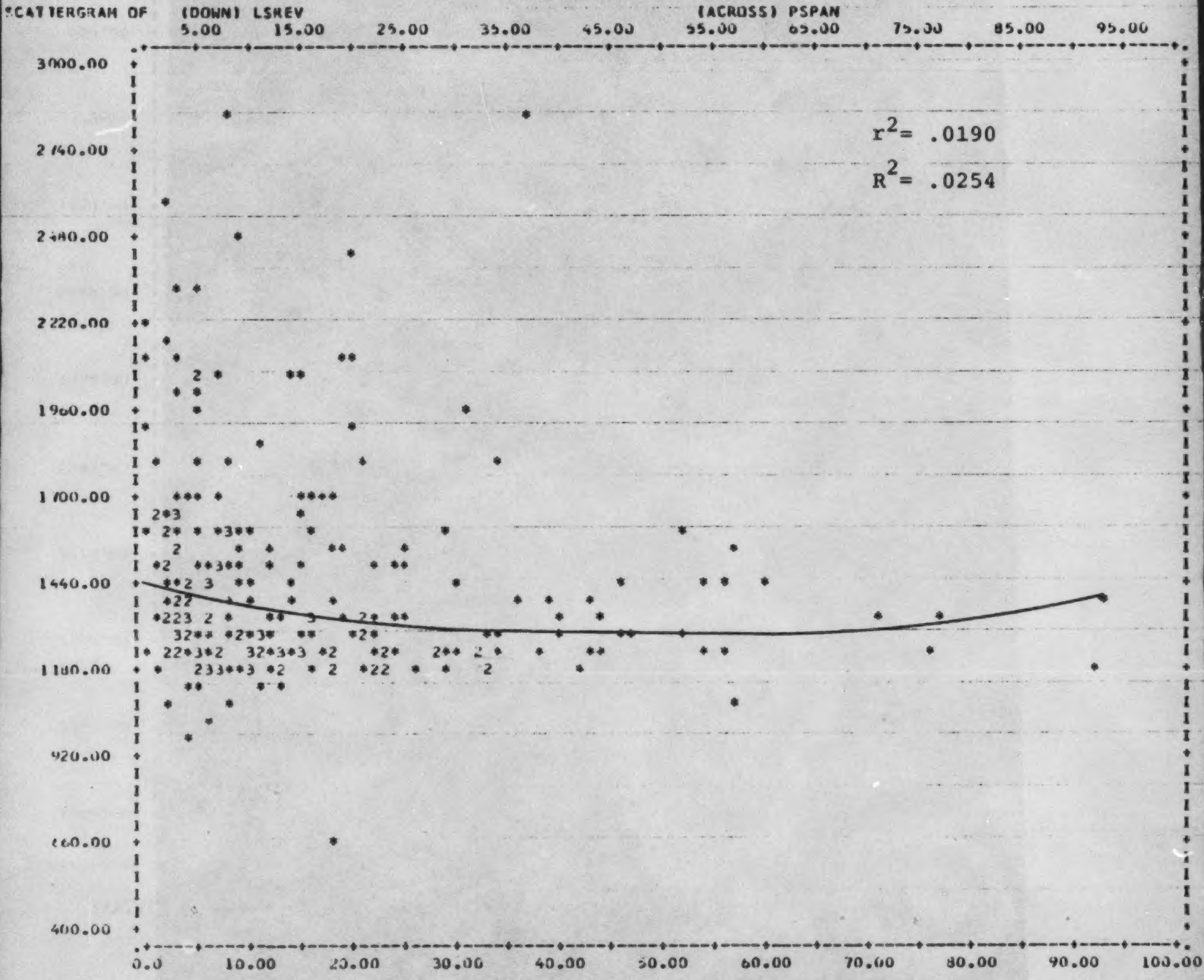


FIGURE 15

CALIFORNIA UNIFIED DISTRICTS: LOCAL + STATE REVENUE PER PUPIL WITH PERCENT POVERTY PUPILS, 1975-76

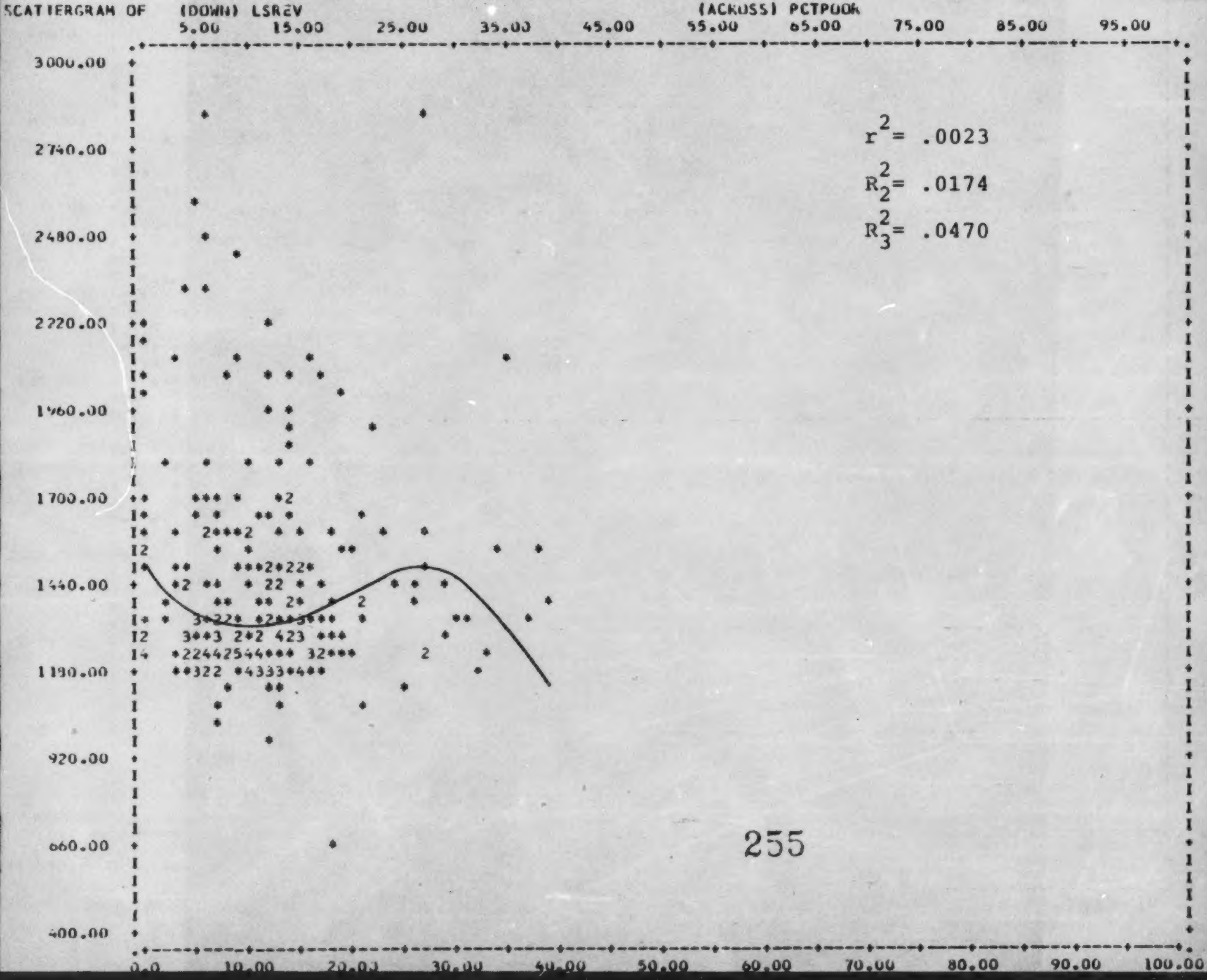


FIGURE 16

CALIFORNIA ELEMENTARY DISTRICTS:
LOCAL + STATE REVENUE PER PUPIL WITH PERCENT BLACK PUPILS, 1975-76

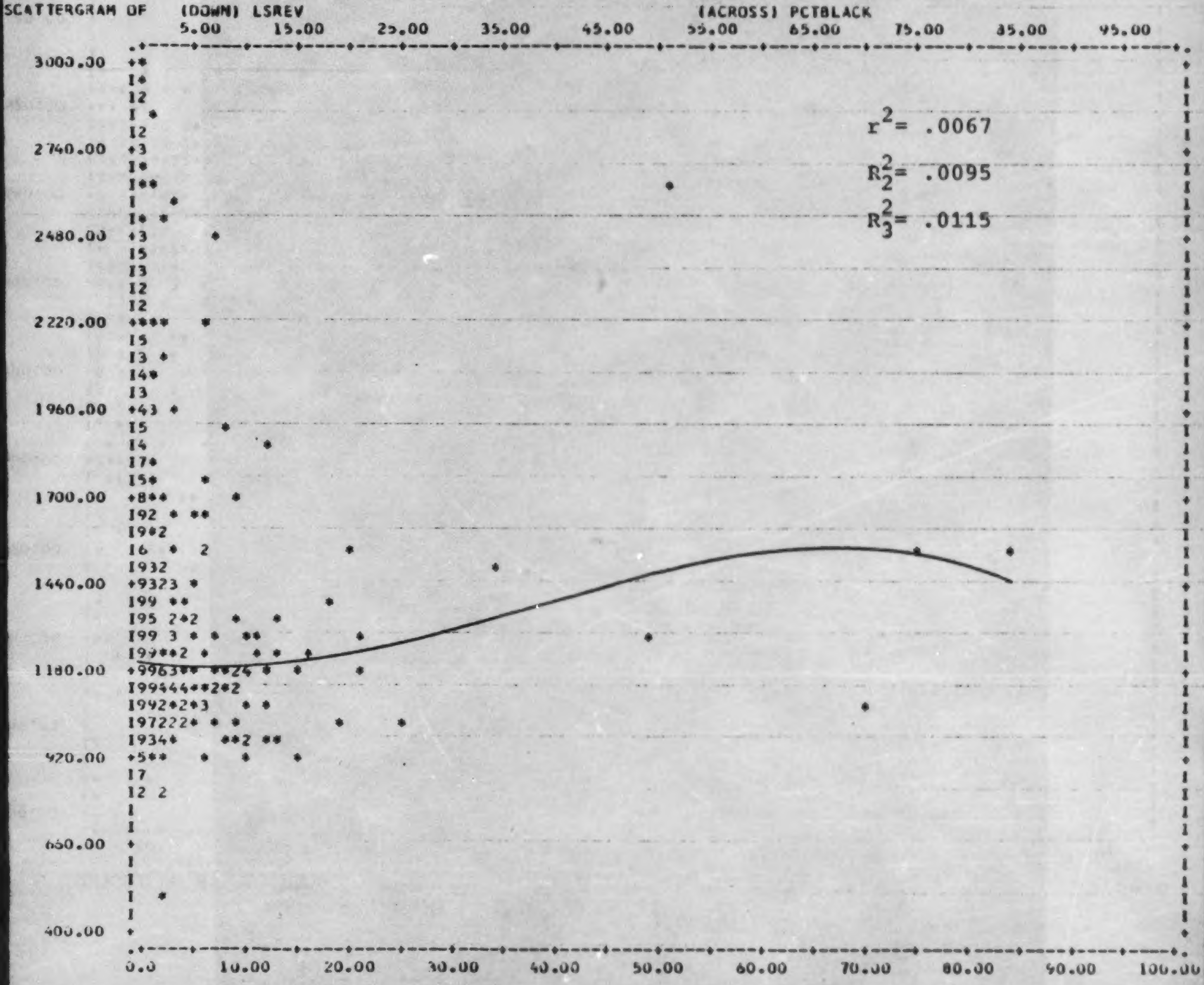


FIGURE 17

CALIFORNIA ELEMENTARY DISTRICTS:
LOCAL + STATE REVENUE PER PUPIL WITH PERCENT MEXICAN-AMERICAN PUPILS, 1975-76

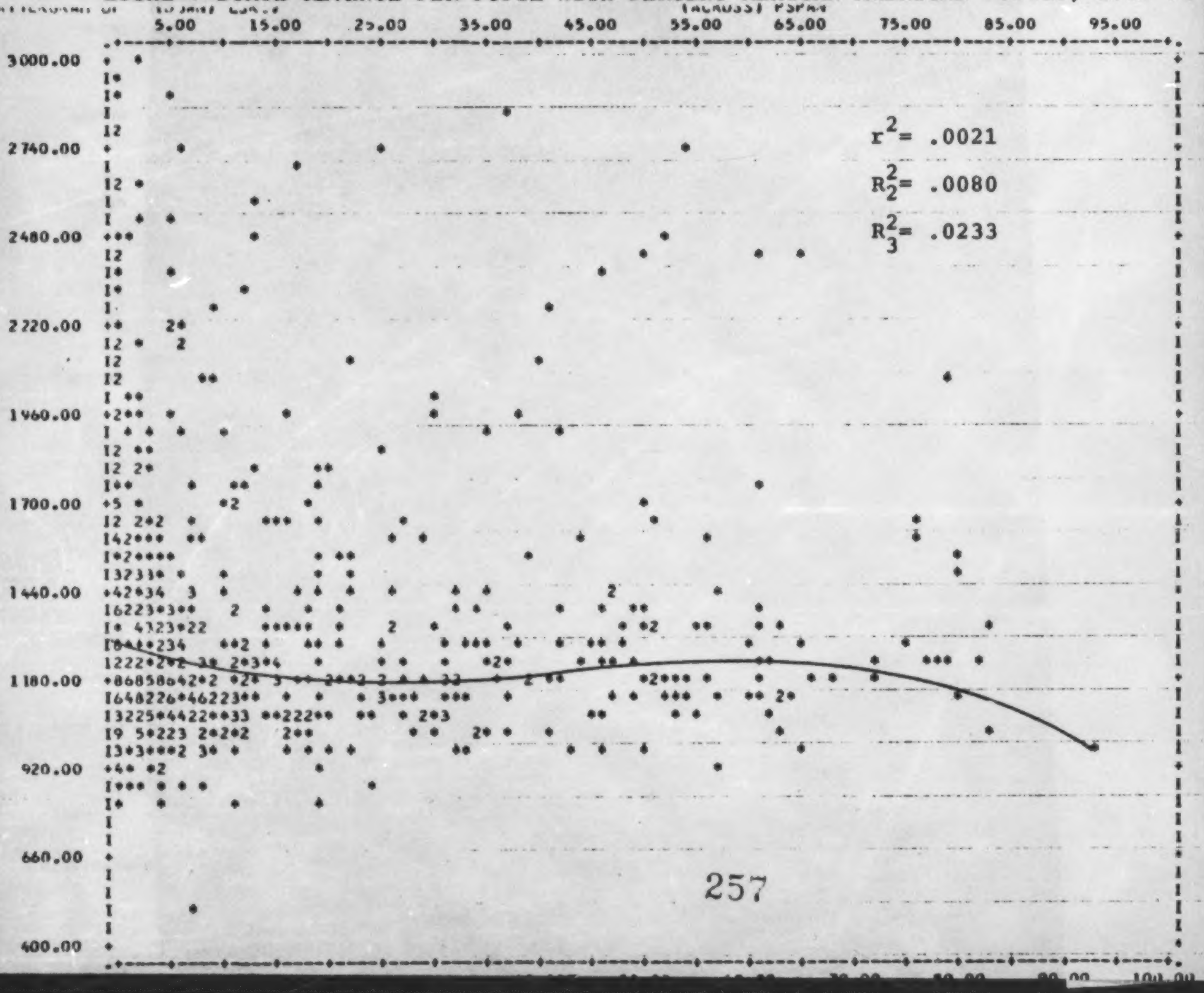


FIGURE 18

CALIFORNIA ELEMENTARY DISTRICTS: LOCAL + STATE REVENUE PER PUPIL WITH PERCENT POVERTY PUPILS, 1975-76

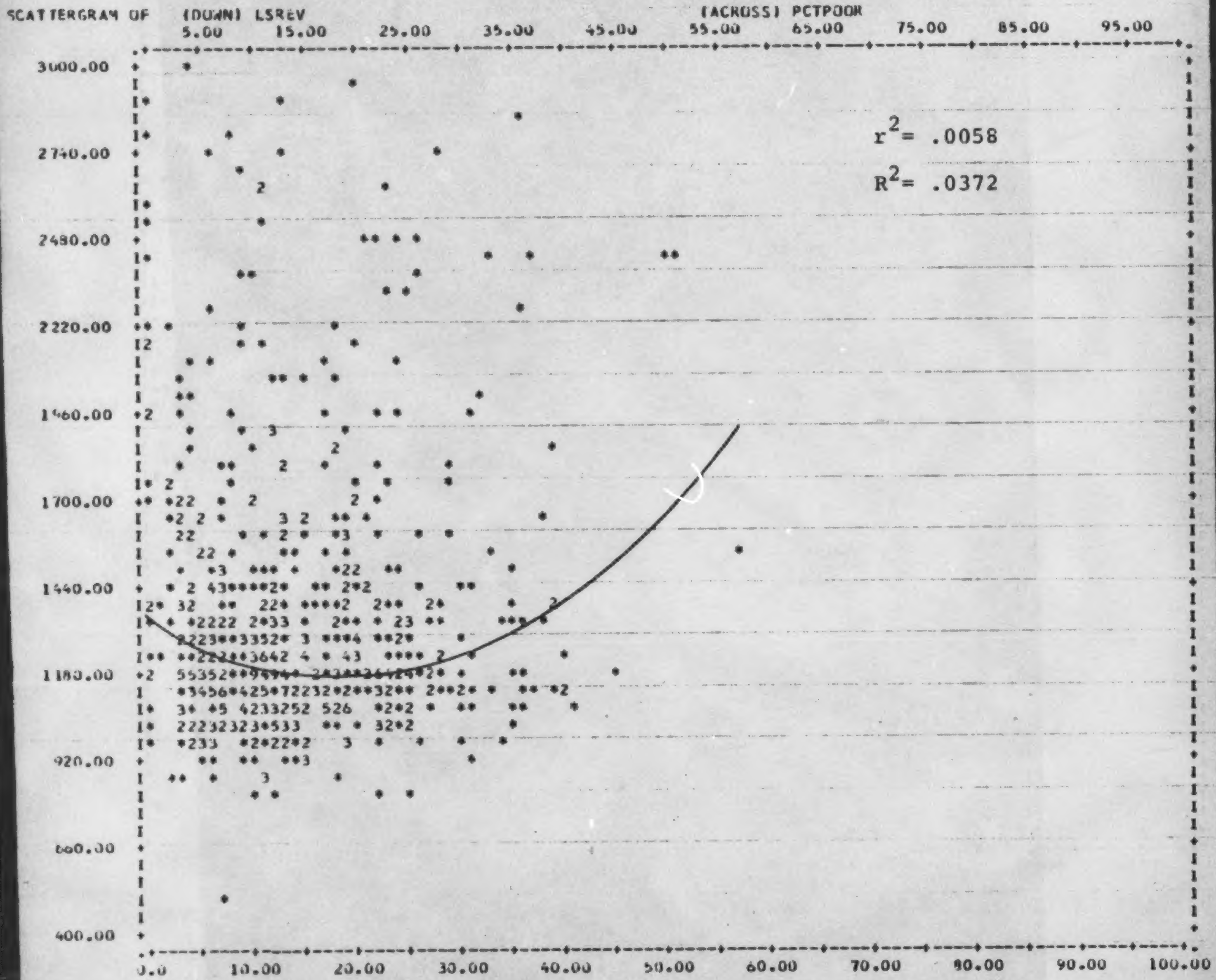
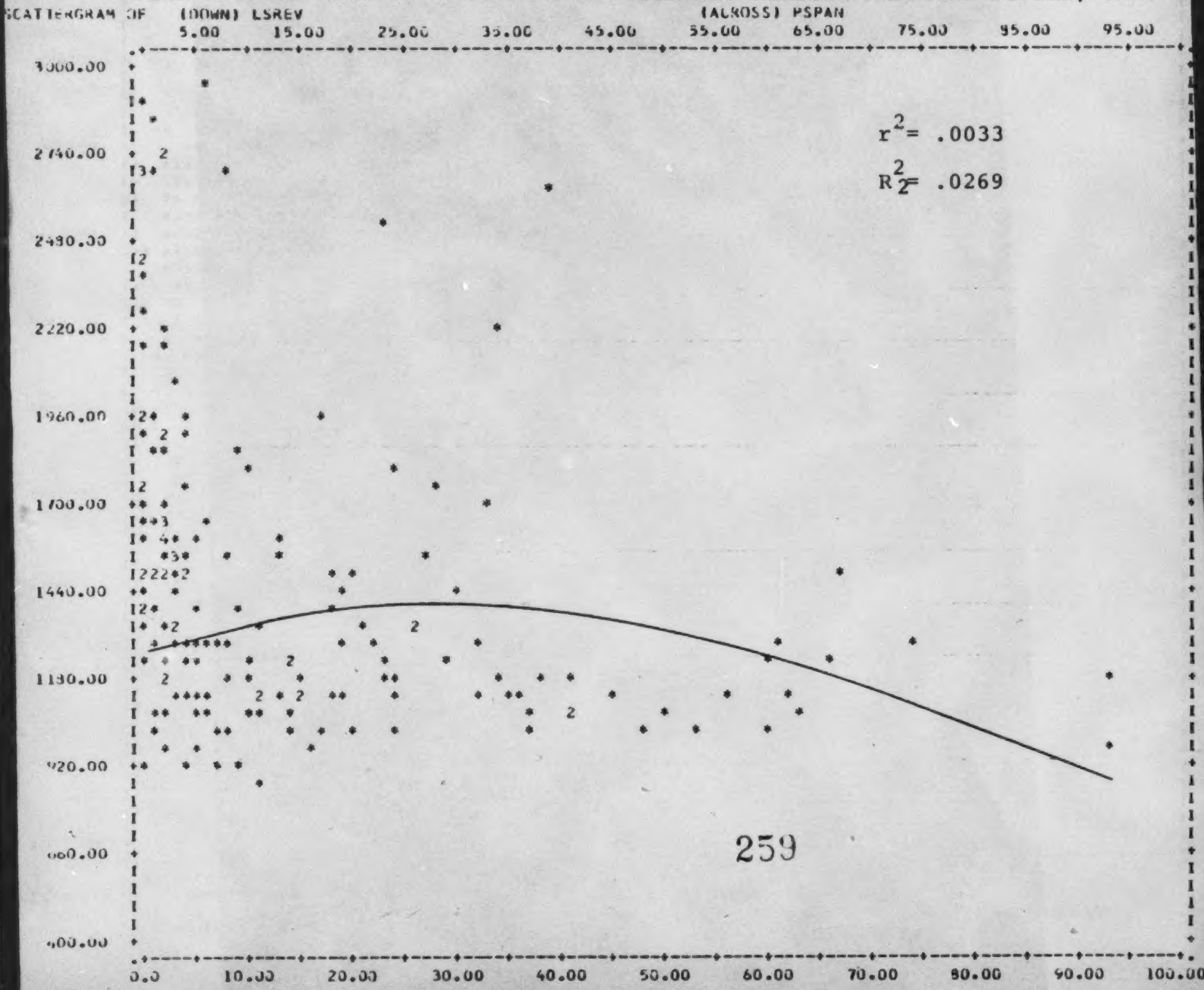


FIGURE 19

COLORADO SCHOOL DISTRICTS:

LOCAL + STATE REVENUE PER PUPIL WITH PERCENT MEXICAN-AMERICAN PUPILS, 1975-7



$r^2 = .0033$

$R^2_2 = .0269$

COLORADO SCHOOL DISTRICTS:

LOCAL + STATE REVENUE PER PUPIL WITH PERCENT POVERTY PUPILS, 1975-76

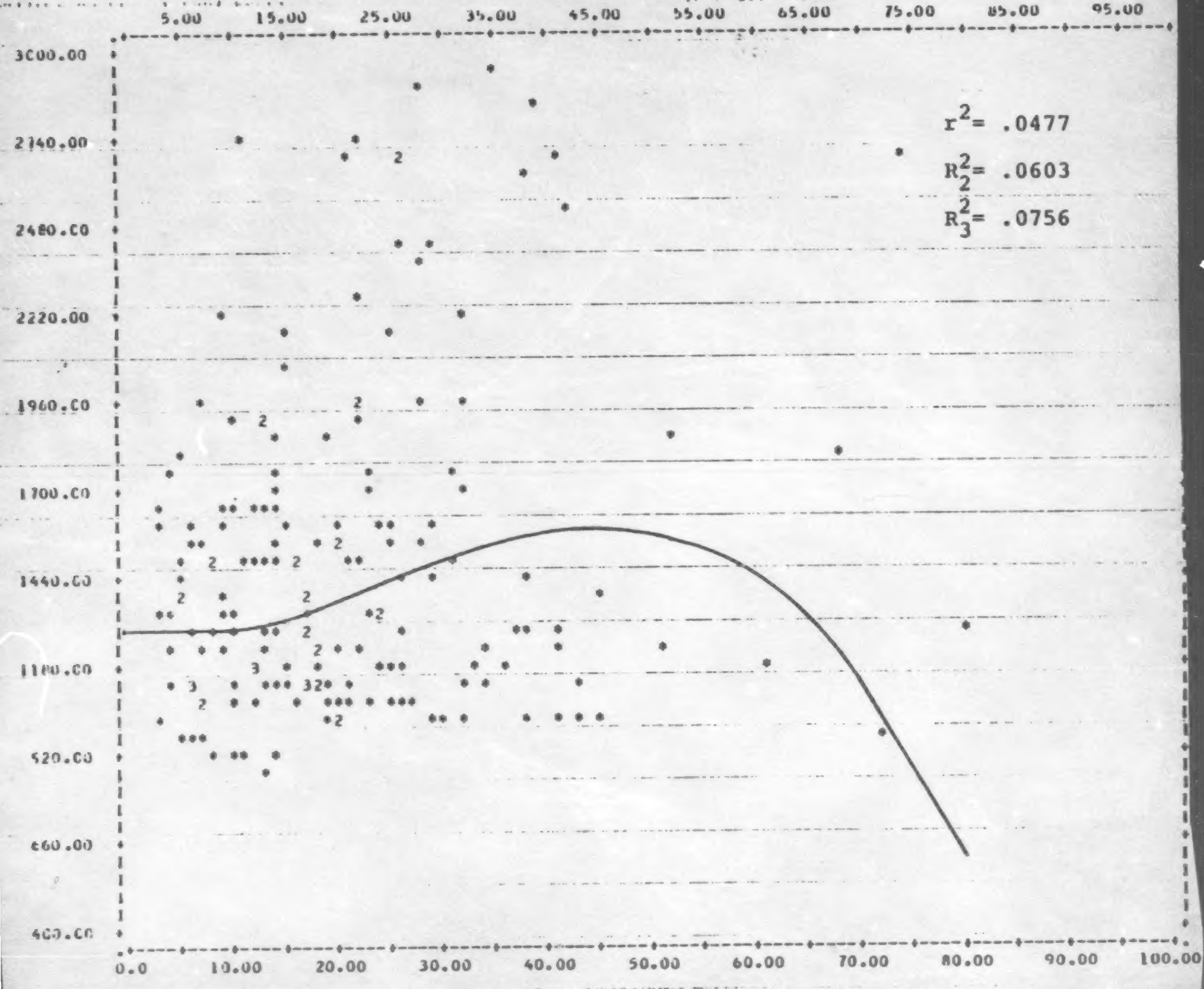


FIGURE 21

FLORIDA SCHOOL DISTRICTS:

LOCAL + STATE REVENUE PER PUPIL WITH PERCENT BLACK PUPILS, 1975-76

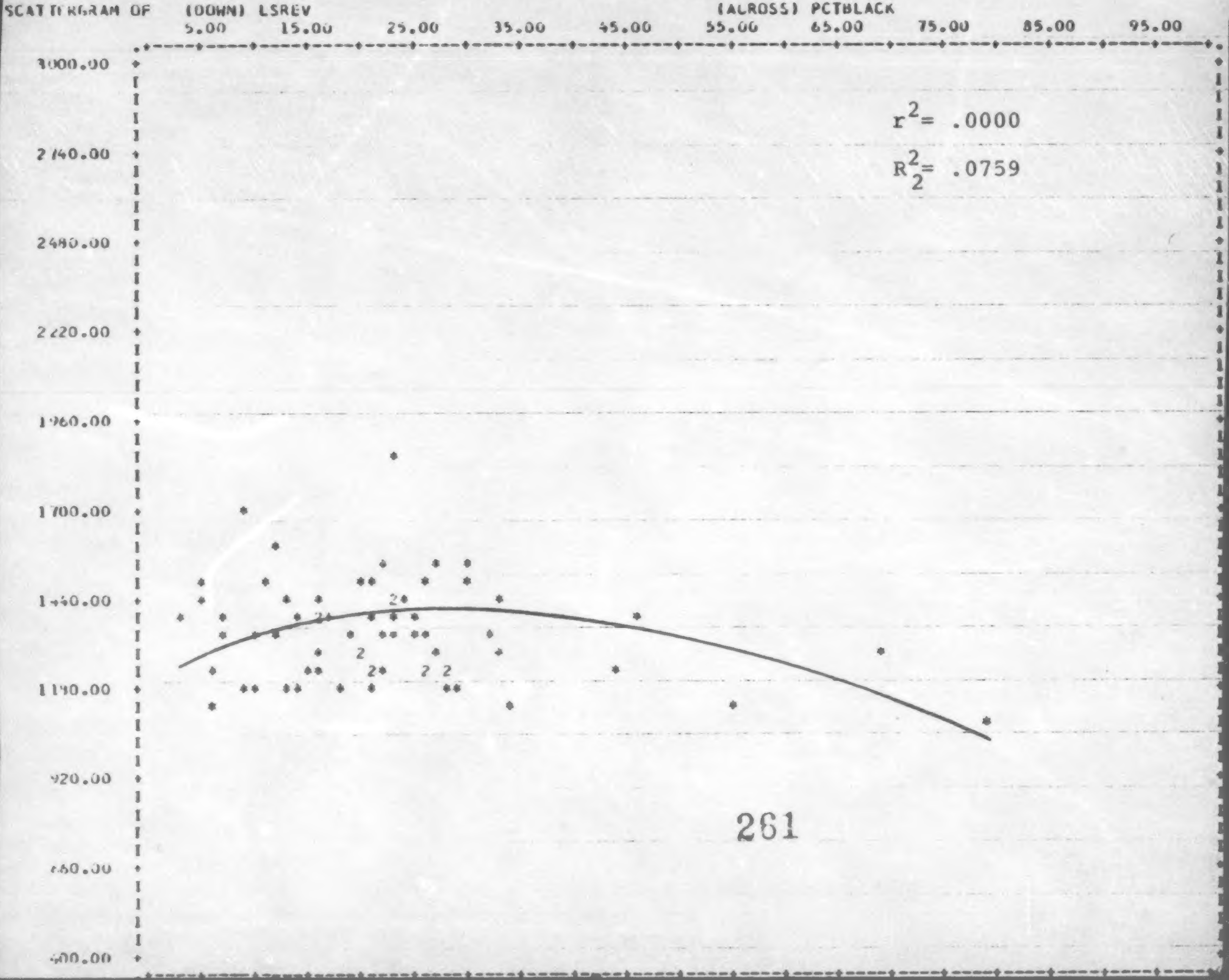


FIGURE 22

FLORIDA SCHOOL DISTRICTS:

LOCAL + STATE REVENUE PER PUPIL WITH PERCENT POVERTY PUPILS, 1975-76

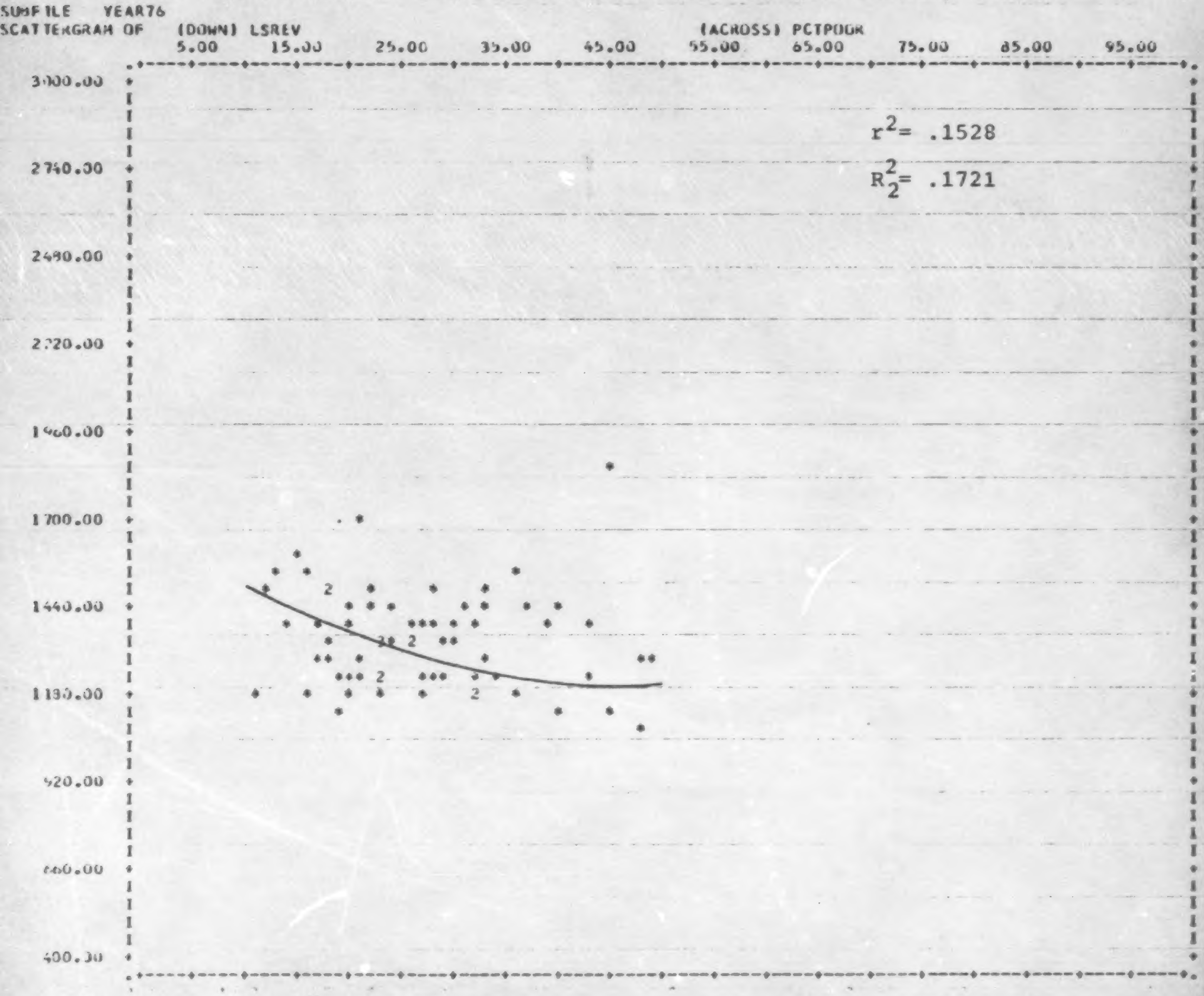
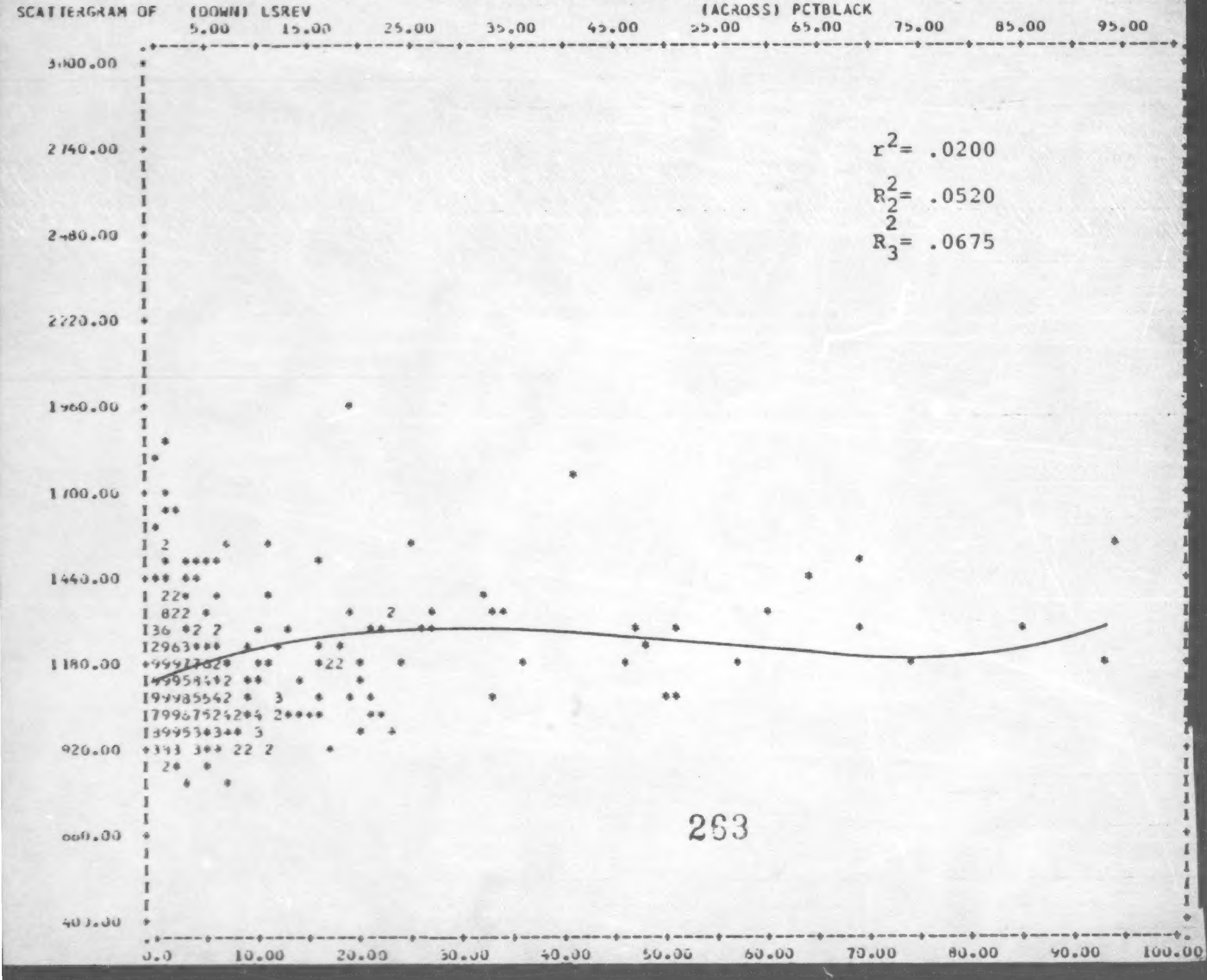


FIGURE 23

MICHIGAN SCHOOL DISTRICTS:
LOCAL + STATE REVENUE PER PUPIL WITH PERCENT MINORITY PUPILS, 1974-75



$r^2 = .0200$

$R_2^2 = .0520$

$R_3^2 = .0675$

MICHIGAN SCHOOL DISTRICTS:
LOCAL + STATE REVENUE PER PUPIL WITH PERCENT POVERTY PUPILS, 1974-75

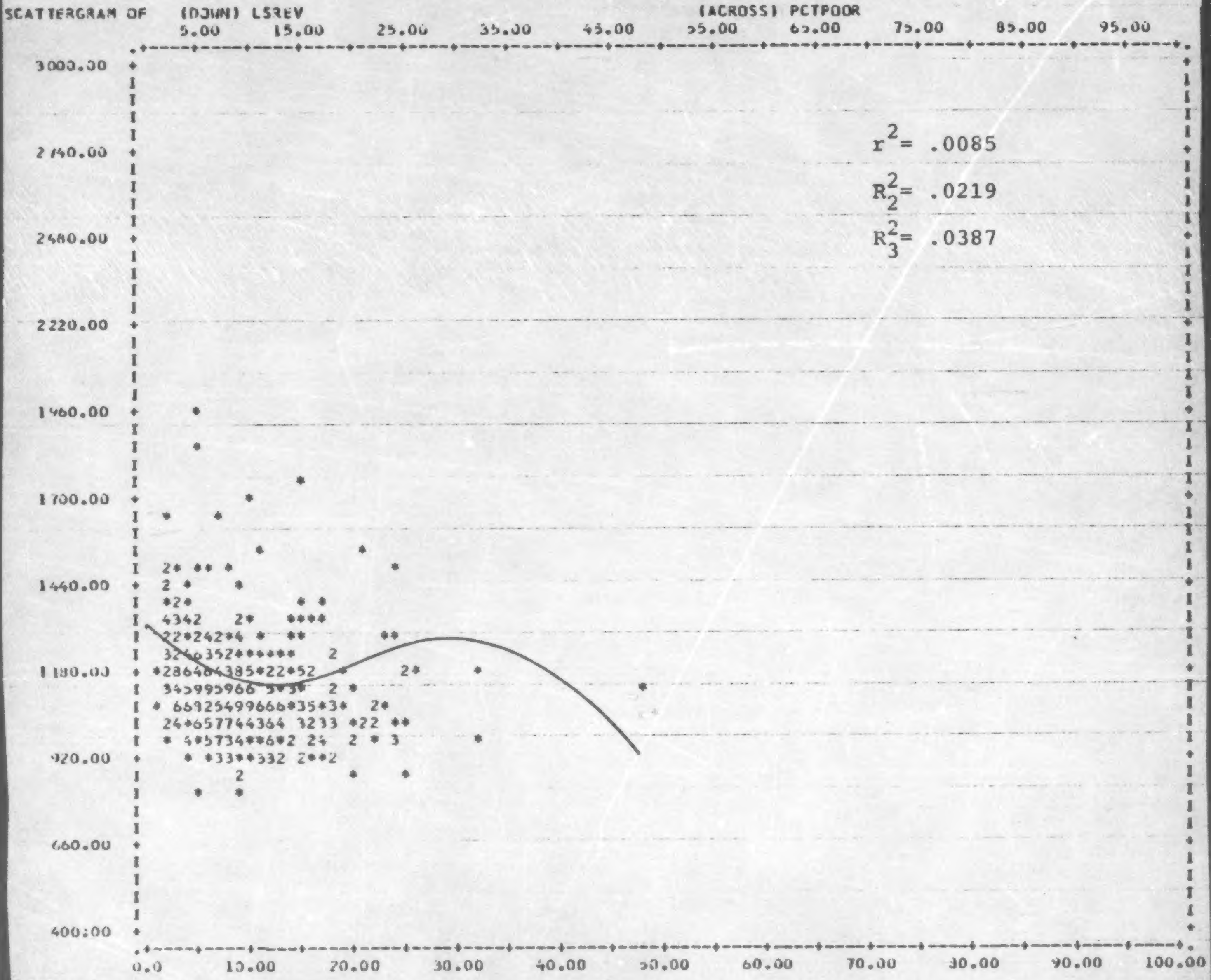
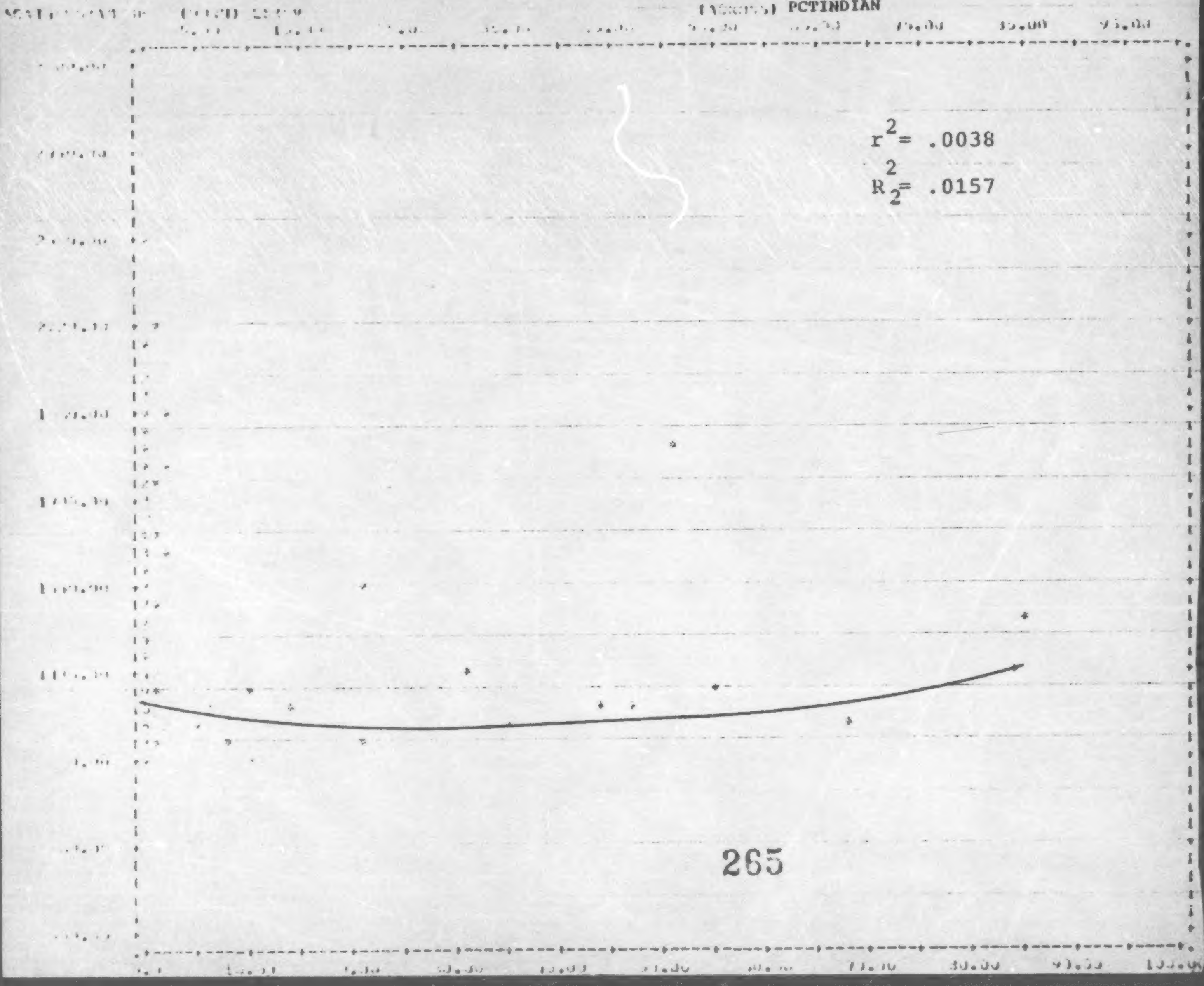


FIGURE 25

NEW MEXICO SCHOOL DISTRICTS:

LOCAL + STATE REVENUE PER PUPIL WITH PERCENT INDIAN PUPILS, 1975-76



NEW MEXICO SCHOOL DISTRICTS:

LOCAL + STATE REVENUE PER PUPILS WITH PERCENT HISPANIC PUPILS, 1975-76

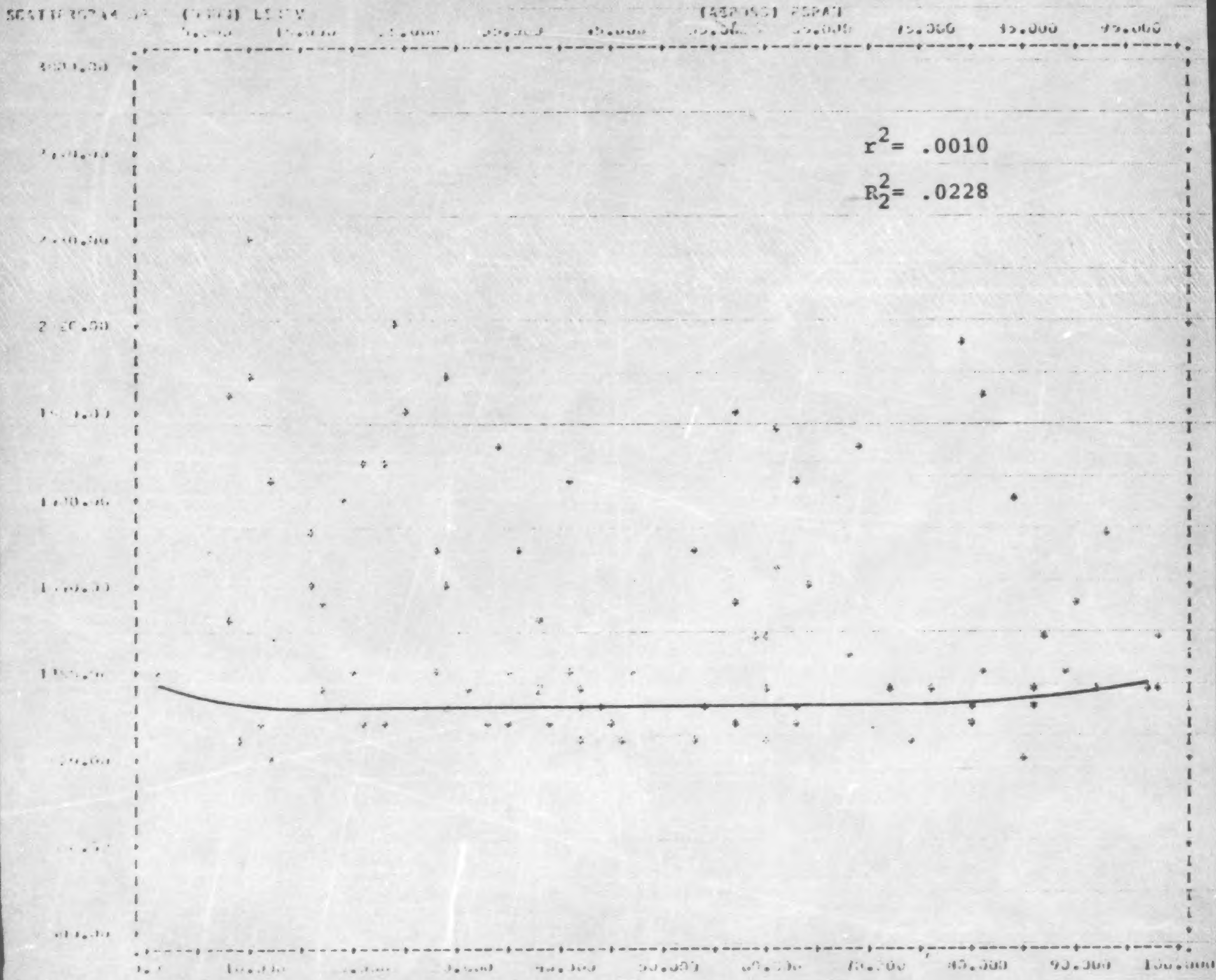


FIGURE 27

NEW MEXICO SCHOOL DISTRICTS:

LOCAL + STATE REVENUE PER PUPIL WITH PERCENT POVERTY PUPILS, 1975-76

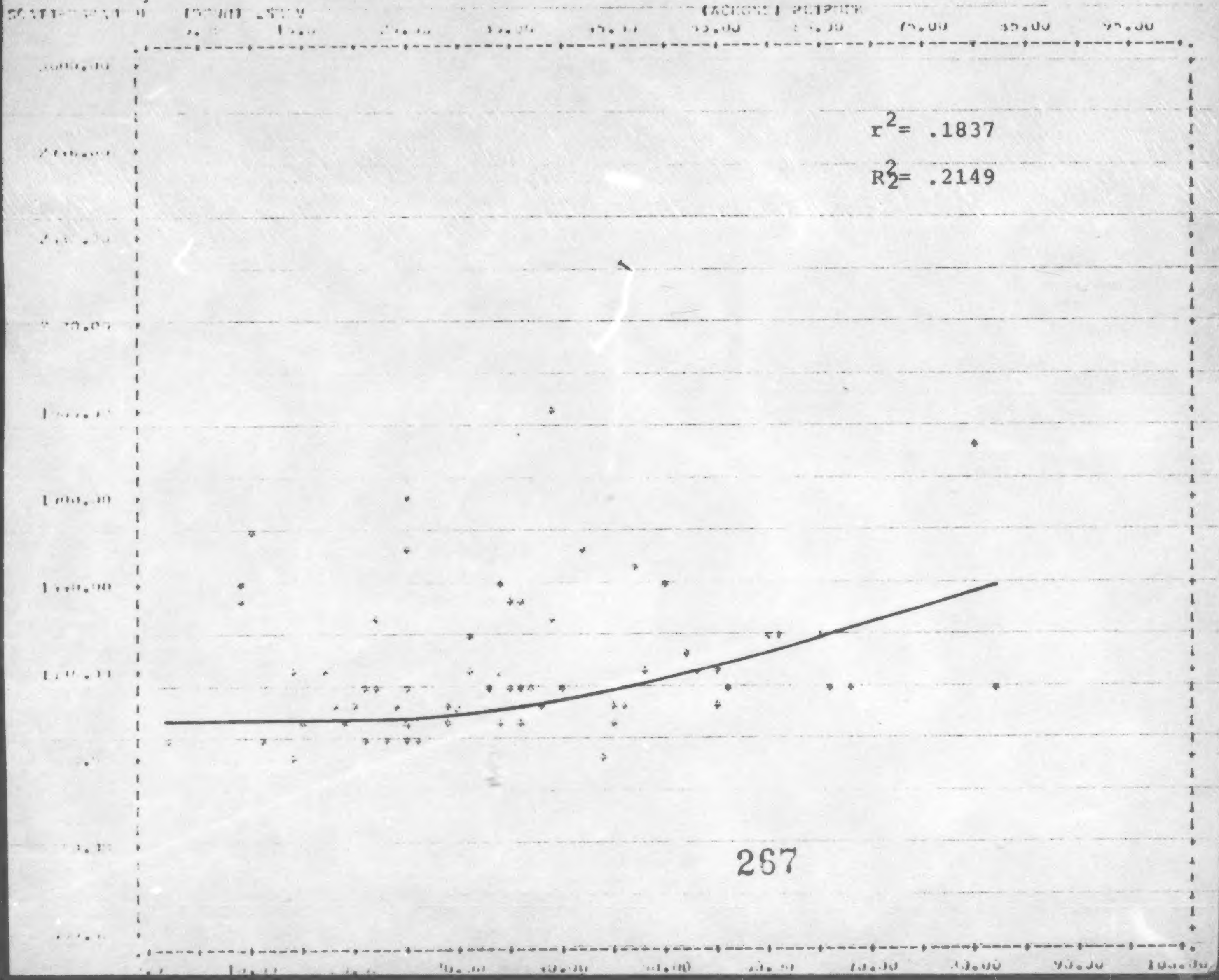


FIGURE 28

TEXAS SCHOOL DISTRICTS:
LOCAL + STATE REVENUE PER PUPIL WITH PERCENT BLACK PUPILS, 1975-76

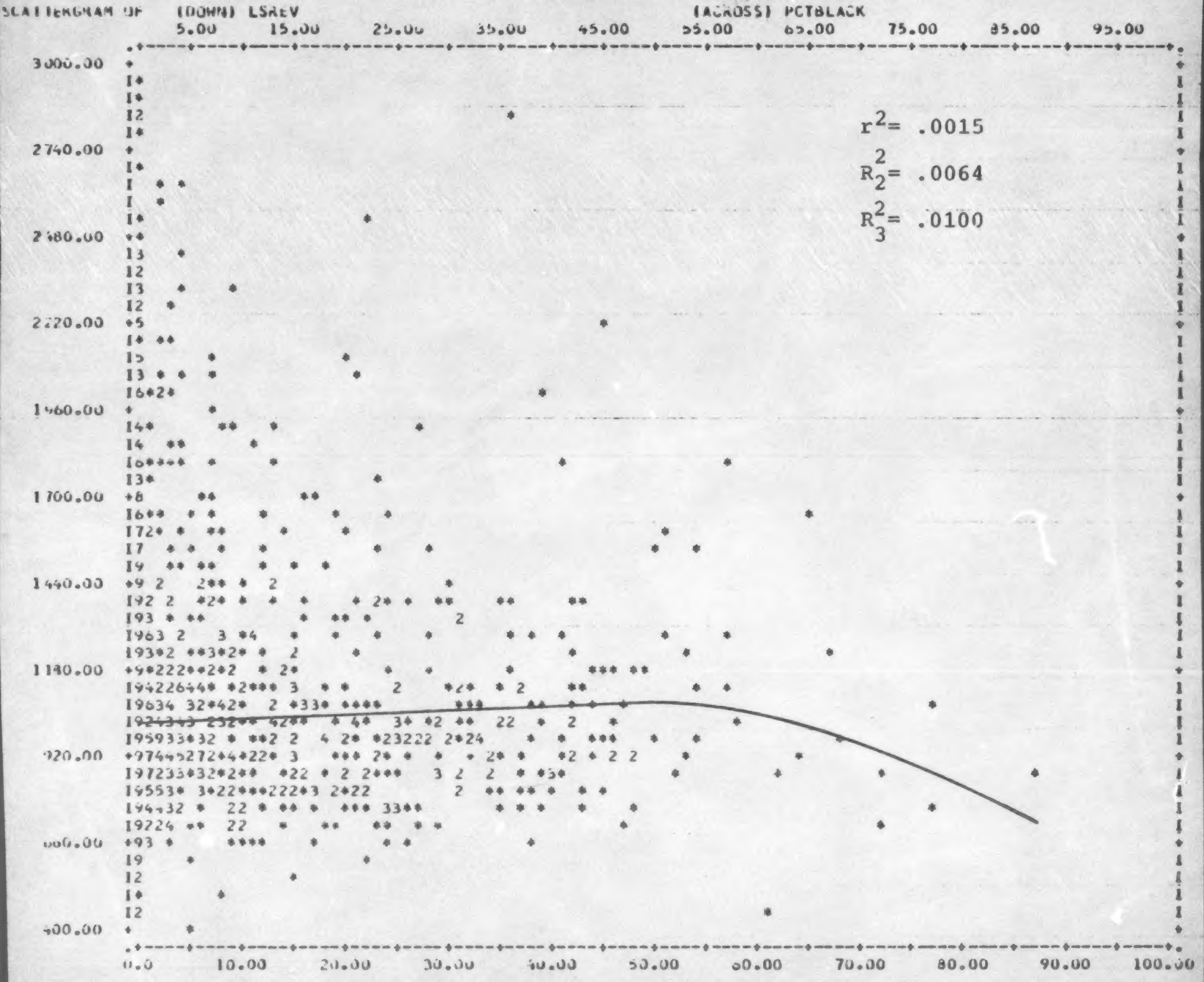
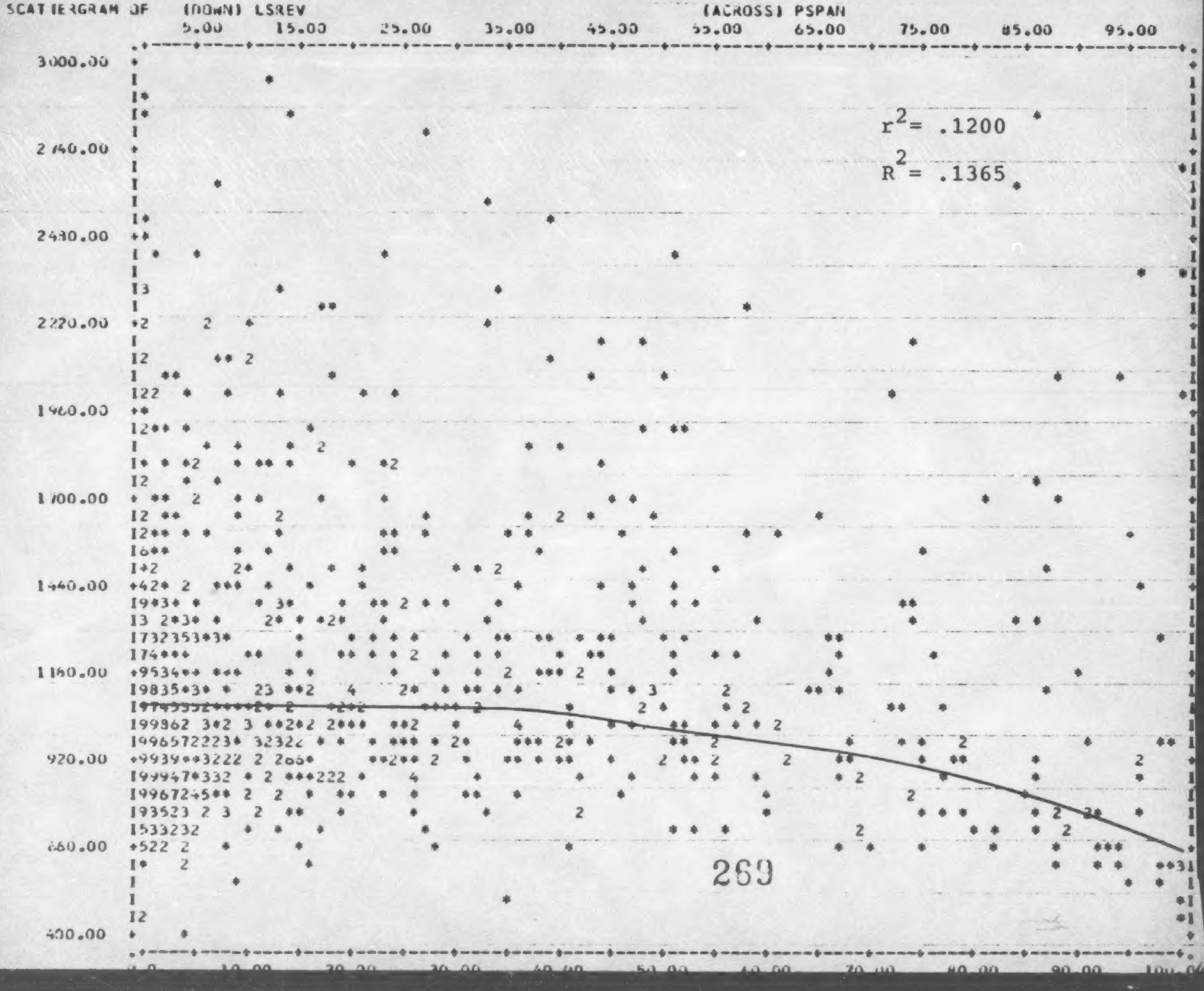


FIGURE 29

TEXAS SCHOOL DISTRICTS:
LOCAL + STATE REVENUE PER PUPIL WITH PERCENT MEXICAN-AMERICAN PUPILS, 1975-76



TEXAS SCHOOL DISTRICTS:
LOCAL + STATE REVENUE PER PUPIL WITH PERCENT POVERTY PUPILS, 1975-76

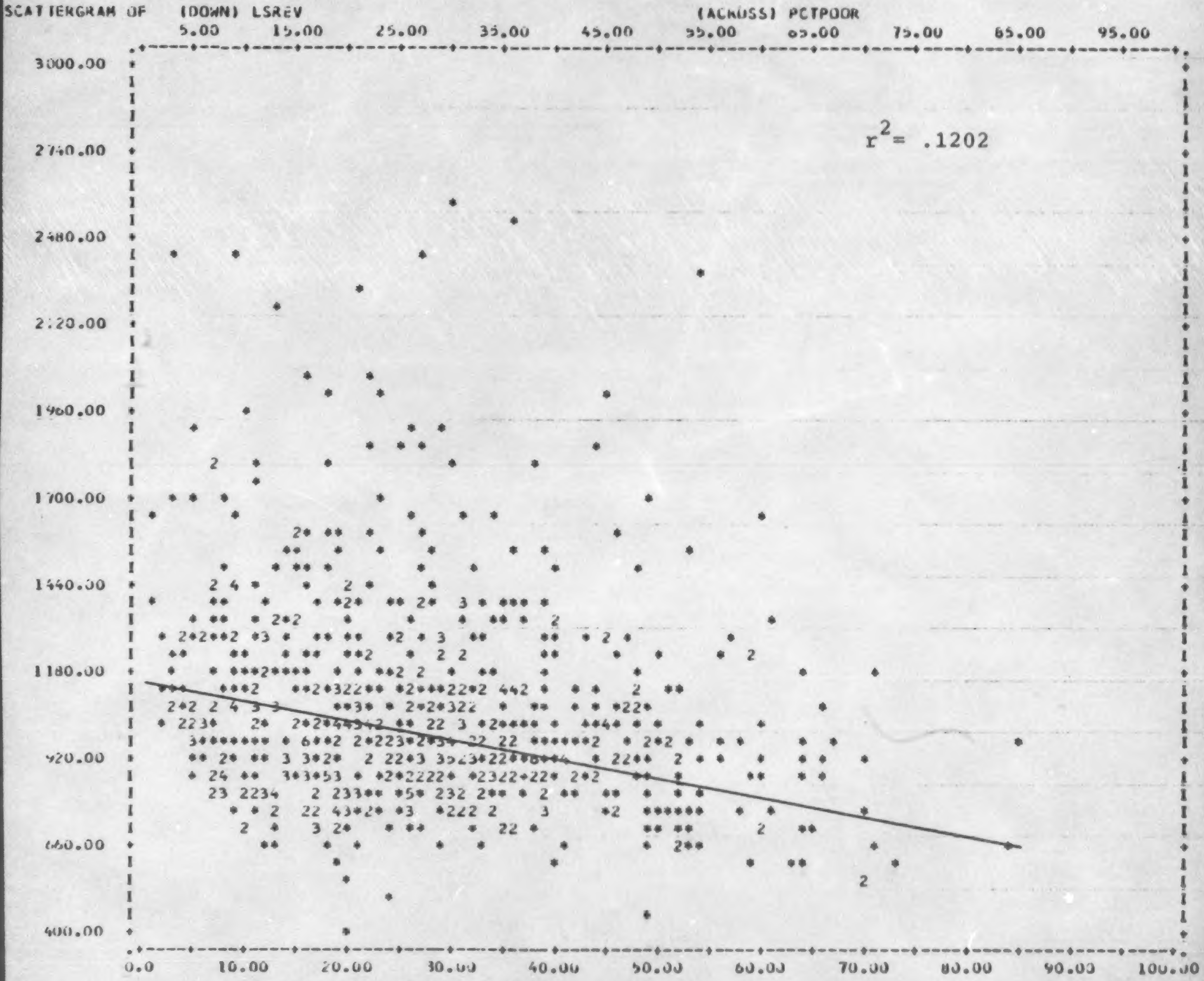
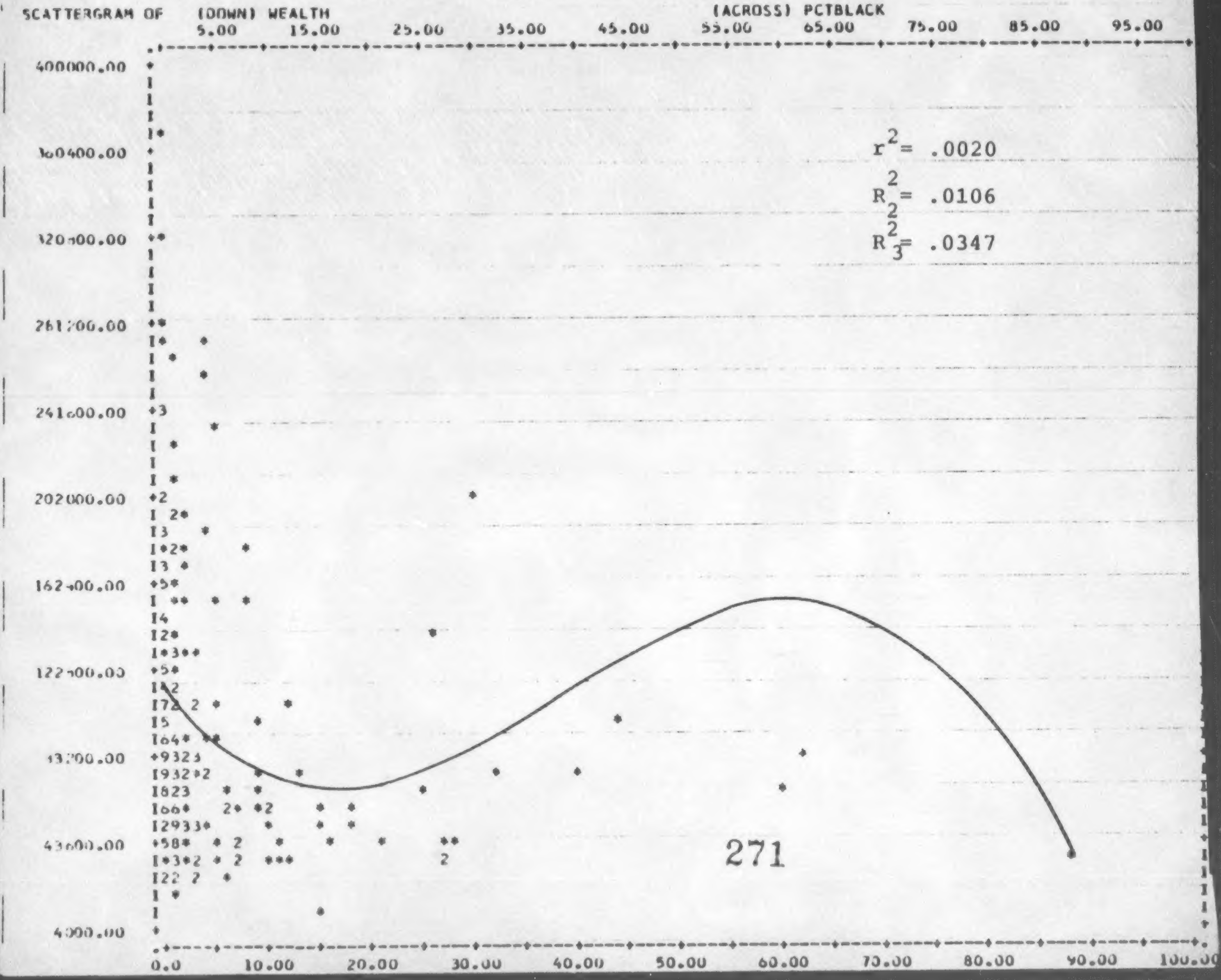


FIGURE 31

CALIFORNIA UNIFIED DISTRICTS:
PROPERTY WEALTH PER PUPIL WITH PERCENT BLACK PUPILS, 1975-76



CALIFORNIA UNIFIED DISTRICTS:
PROPERTY WEALTH PER PUPIL WITH PERCENT MEXICAN-AMERICAN PUPILS, 1975-76

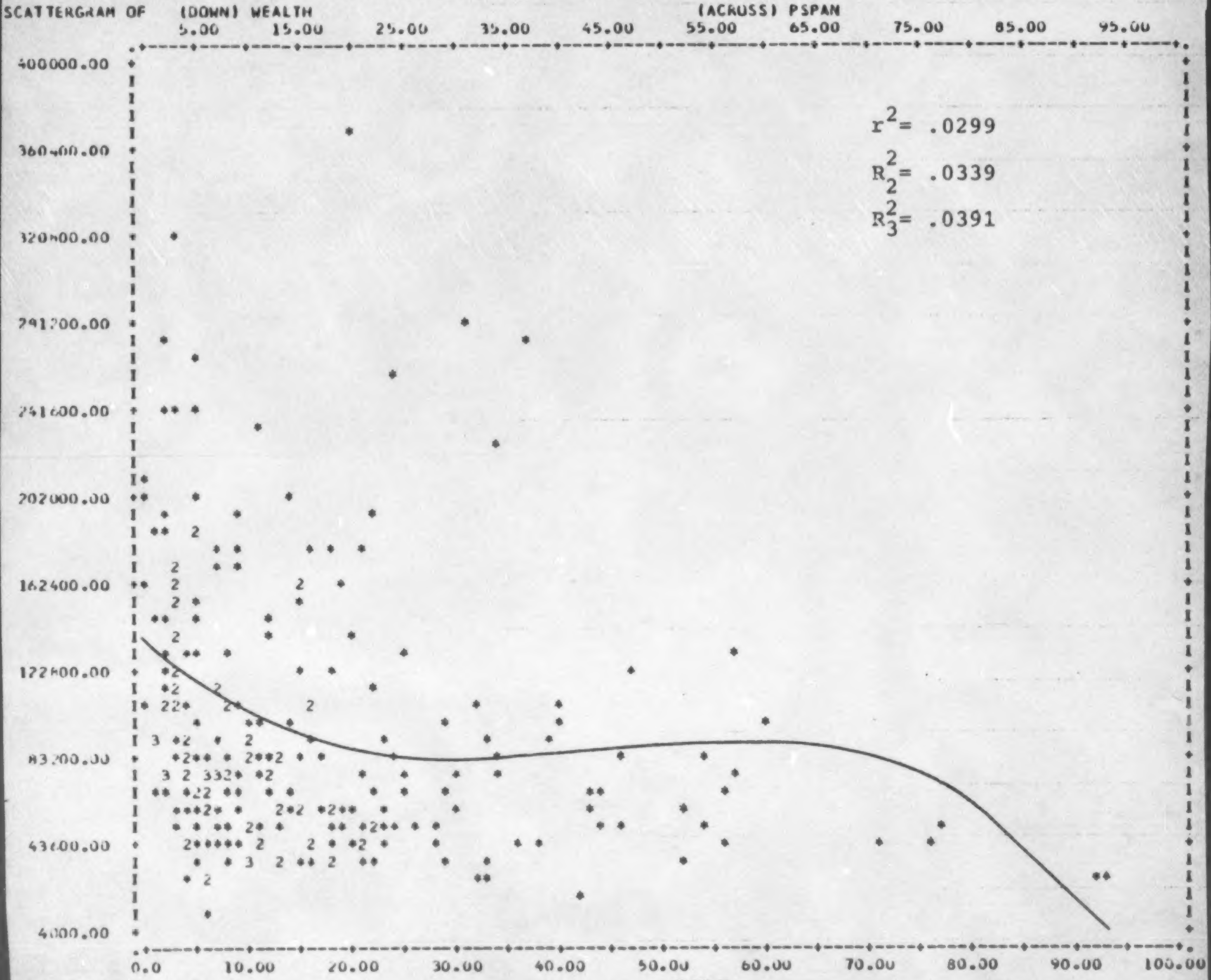


FIGURE 33

CALIFORNIA UNIFIED DISTRICTS: PROPERTY WEALTH PER PUPIL WITH PERCENT POVERTY PUPILS, 1975-76

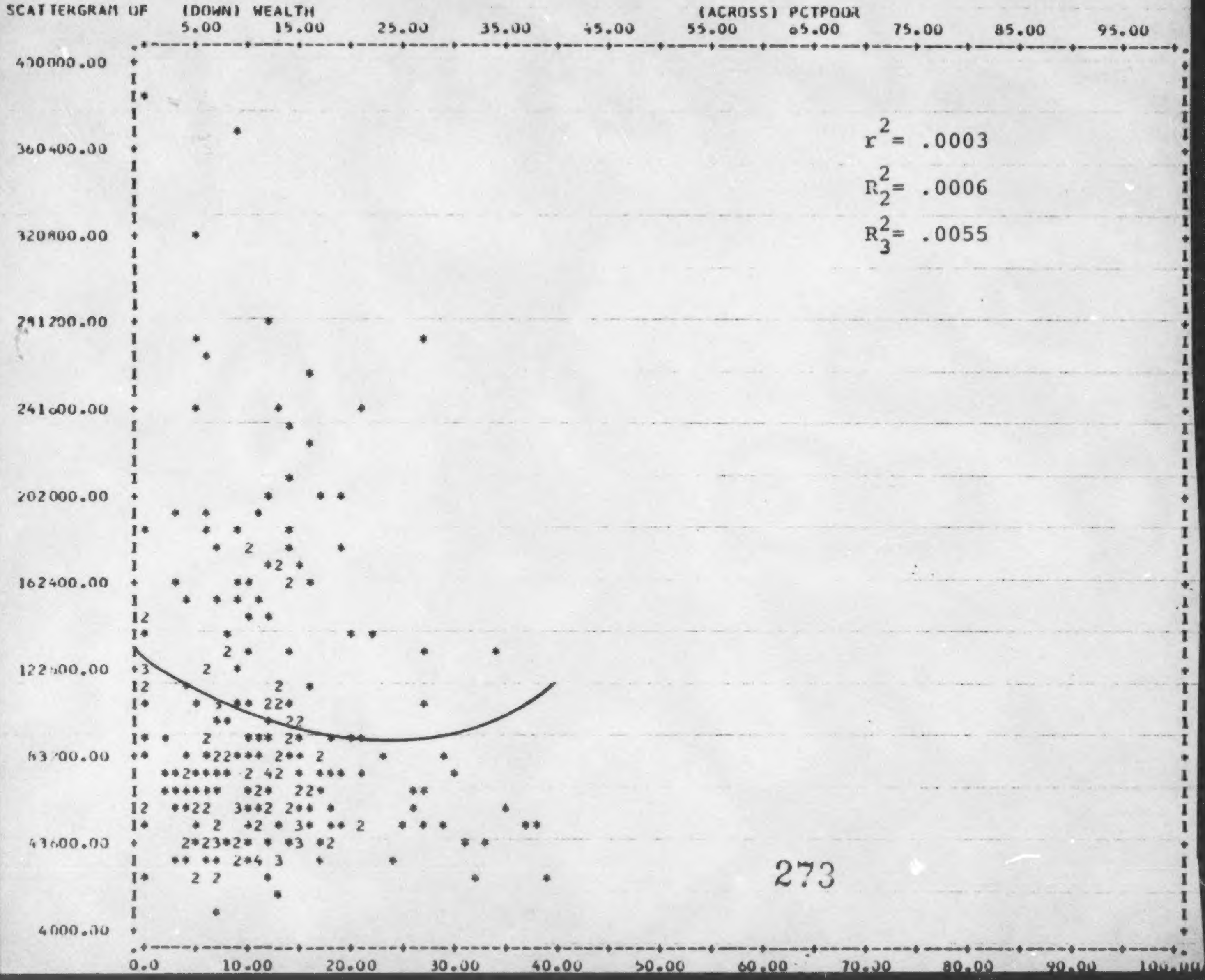


FIGURE 34

CALIFORNIA ELEMENTARY DISTRICTS:
PROPERTY WEALTH PER PUPIL WITH PERCENT BLACK PUPILS, 1975-76

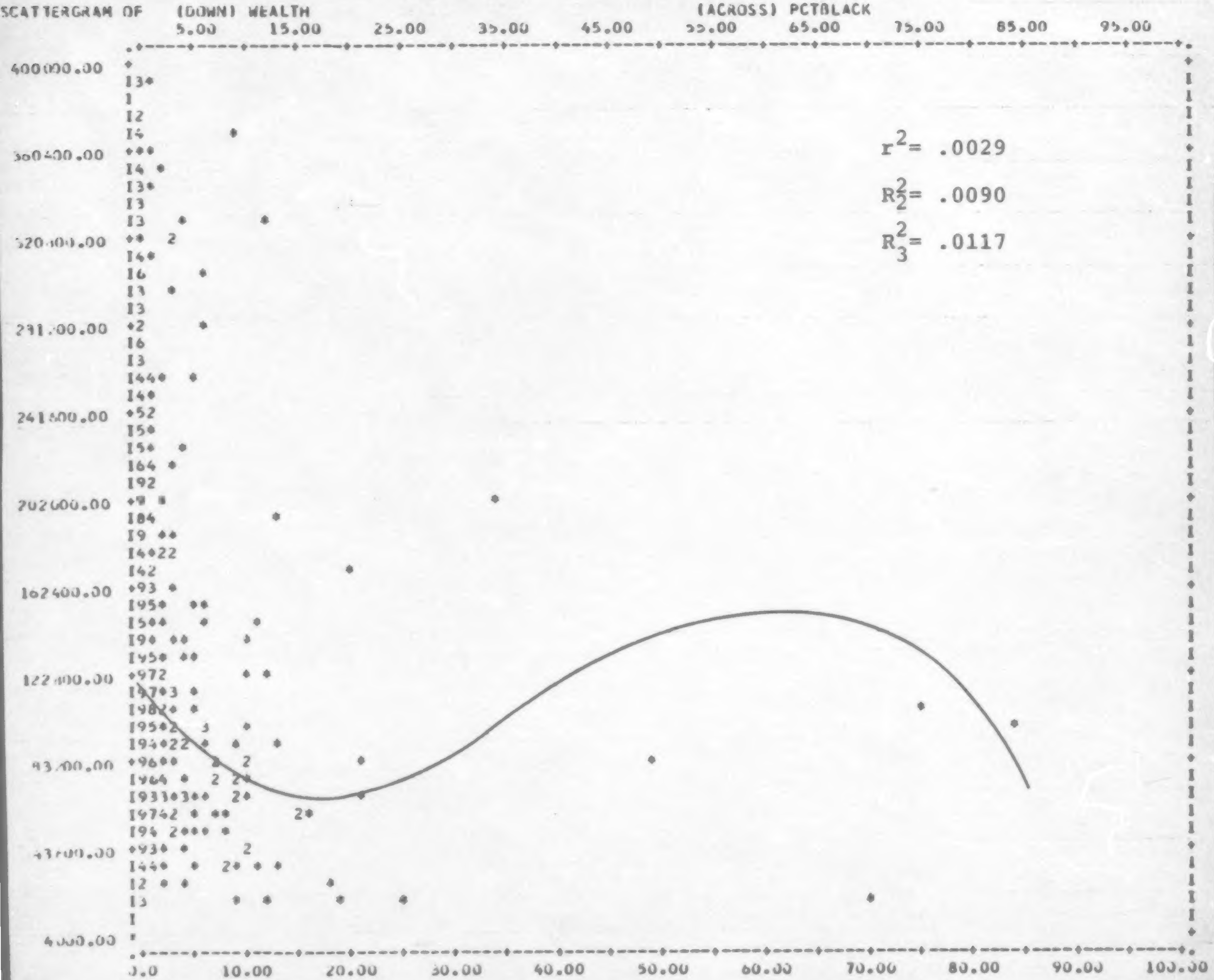
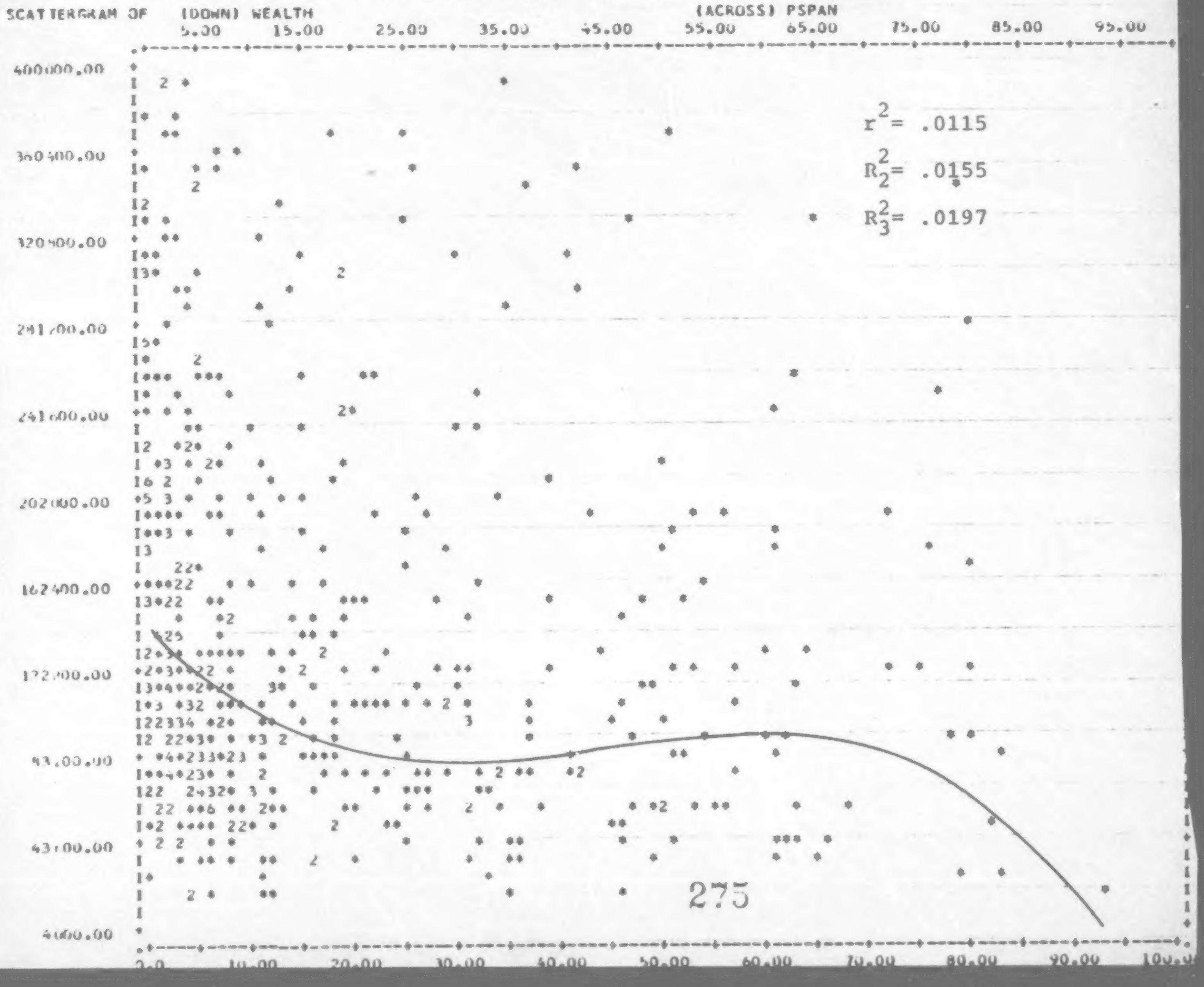


FIGURE 35

CALIFORNIA ELEMENTARY DISTRICTS:
PROPERTY WEALTH PER PUPIL WITH PERCENT MEXICAN-AMERICAN PUPILS, 1975-76



CALIFORNIA ELEMENTARY DISTRICTS:
PROPERTY WEALTH PER PUPIL WITH PERCENT POVERTY PUPILS, 1975-76

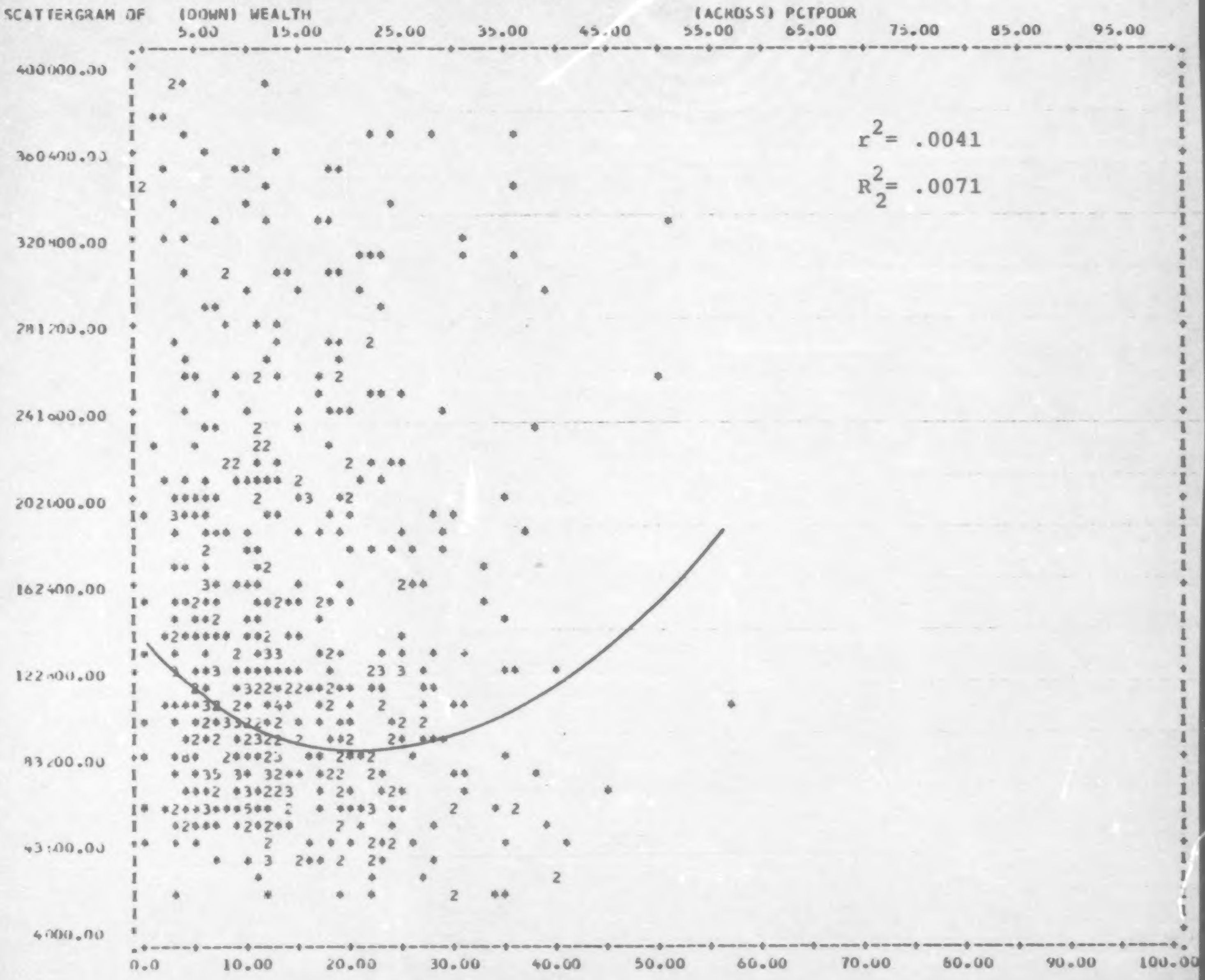
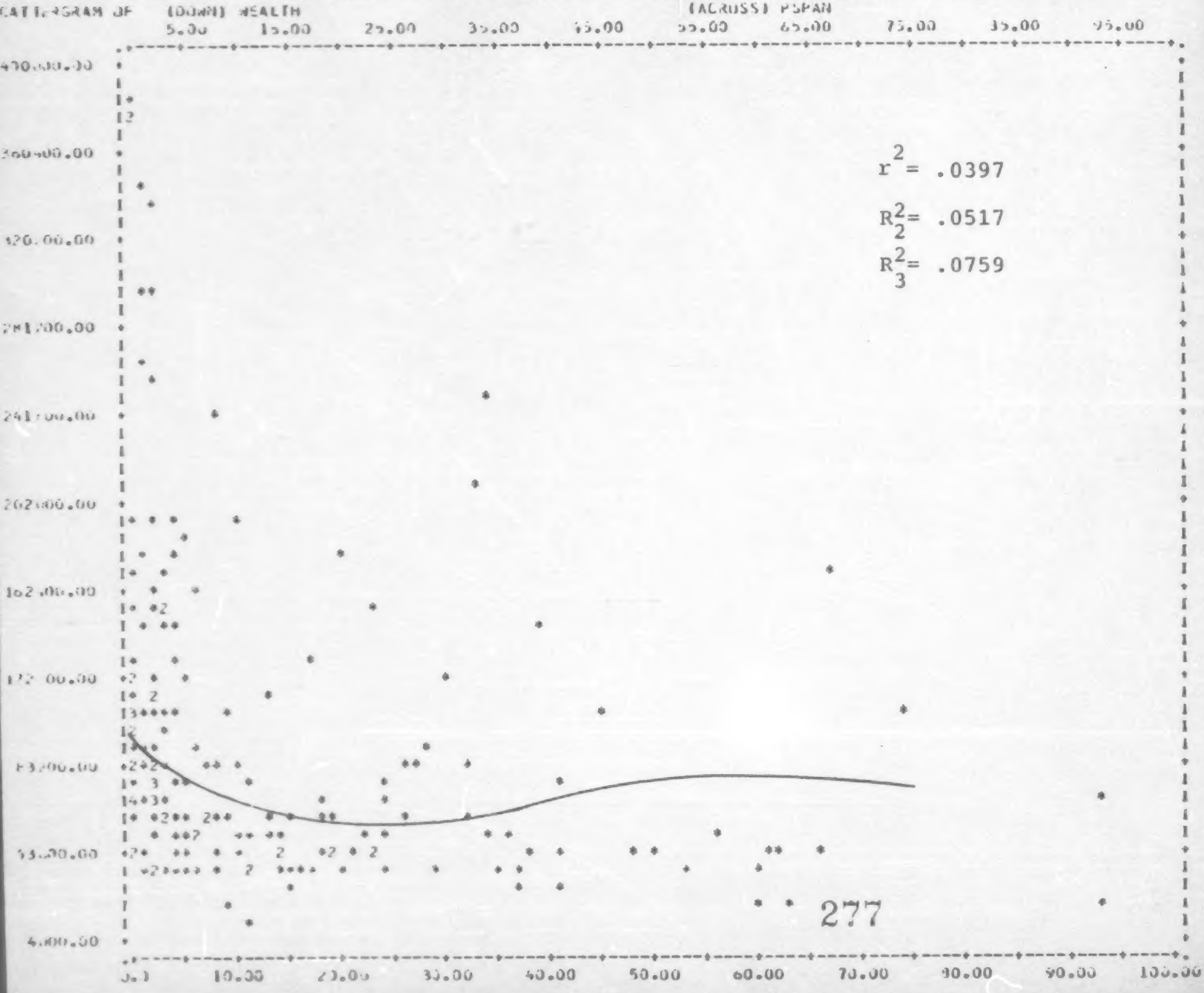


FIGURE 37

COLORADO SCHOOL DISTRICTS:

PROPERTY WEALTH PER PUPIL WITH PERCENT MEXICAN-AMERICAN PUPILS, 1975-76



COLORADO SCHOOL DISTRICTS:

PROPERTY WEALTH PER PUPIL WITH PERCENT POVERTY PUPILS, 1975-76

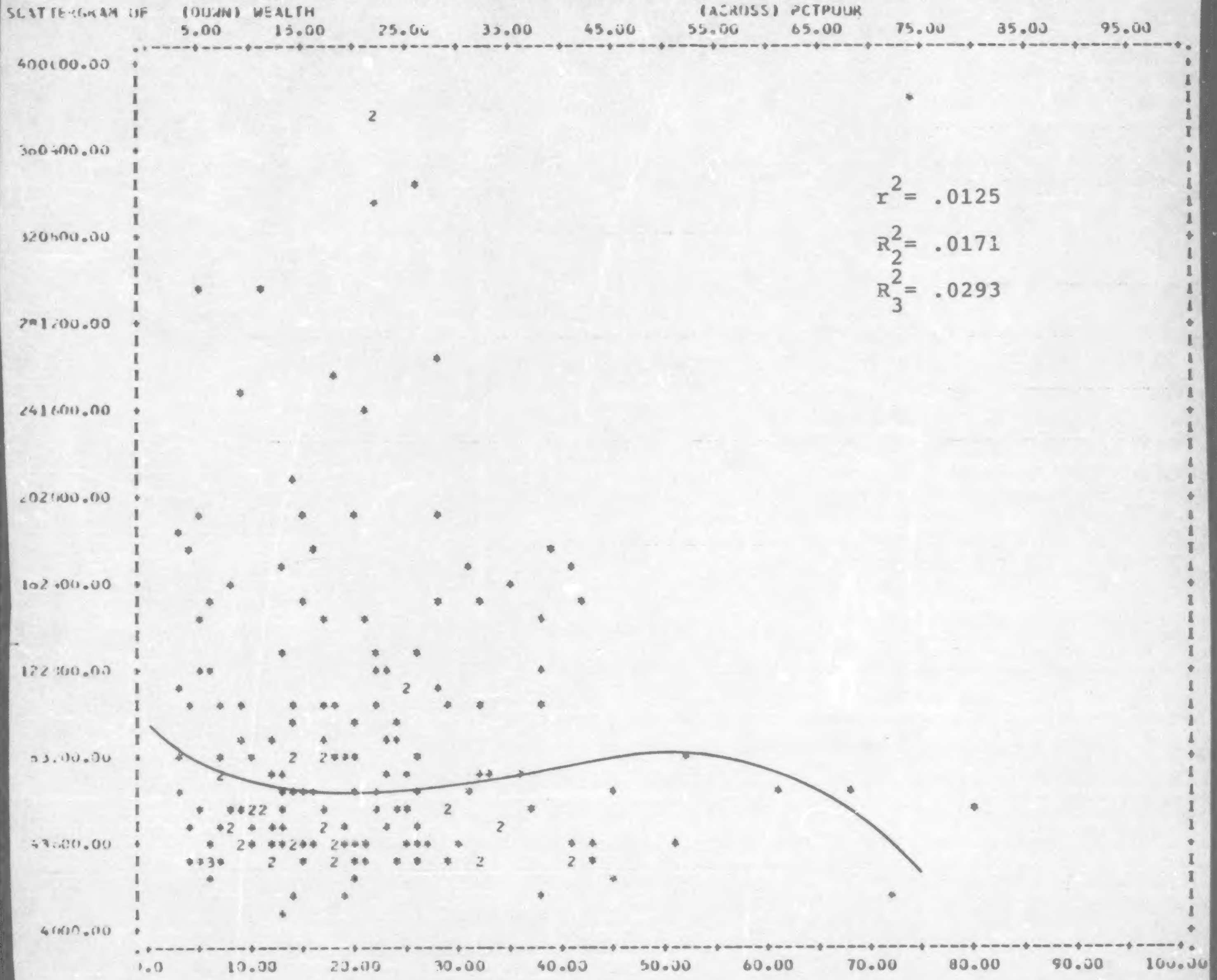
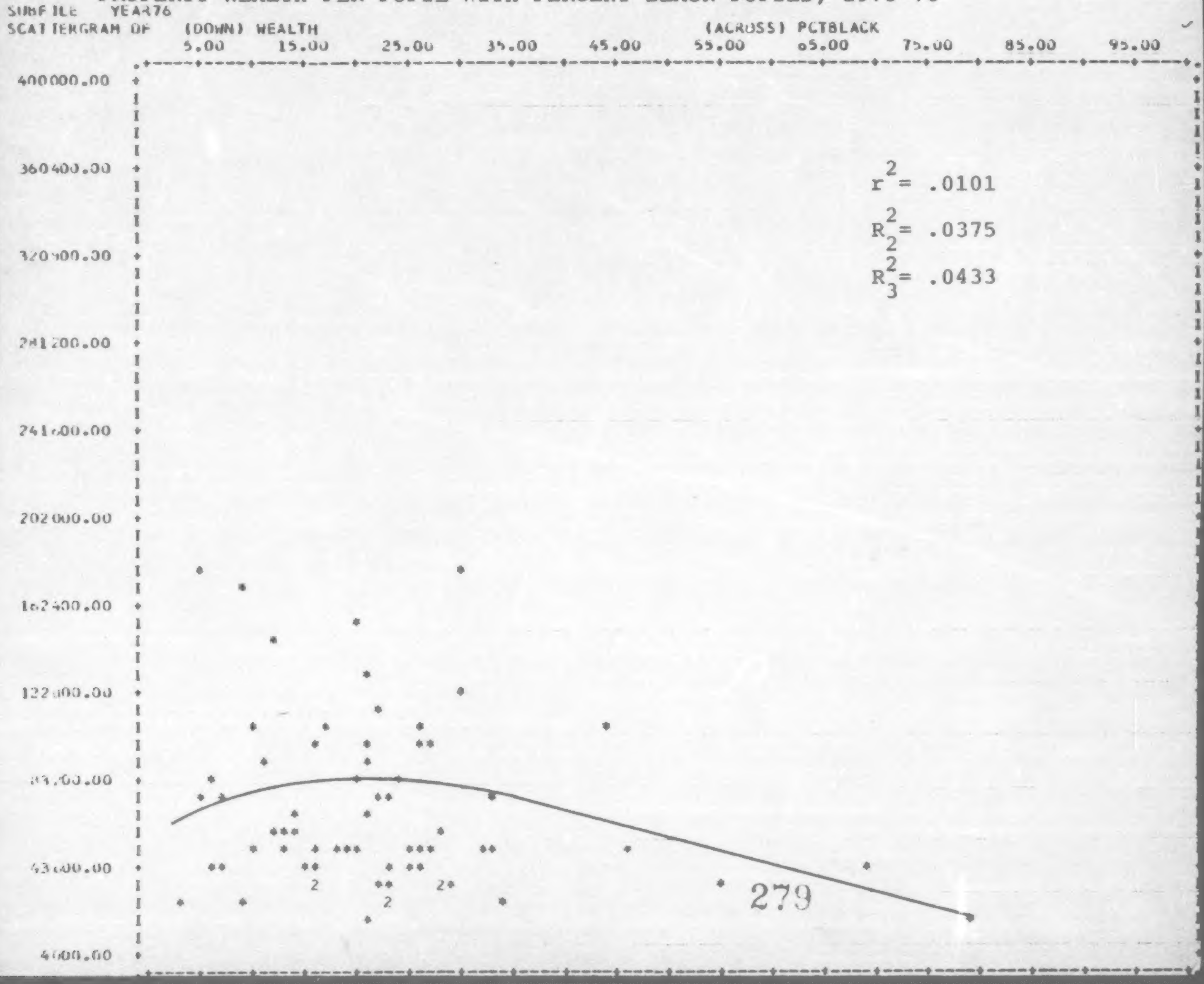


FIGURE 39

FLORIDA SCHOOL DISTRICTS:

PROPERTY WEALTH PER PUPIL WITH PERCENT BLACK PUPILS, 1975-76



MICHIGAN SCHOOL DISTRICTS:
PROPERTY WEALTH PER PUPIL WITH PERCENT MINORITY PUPILS, 1974-75

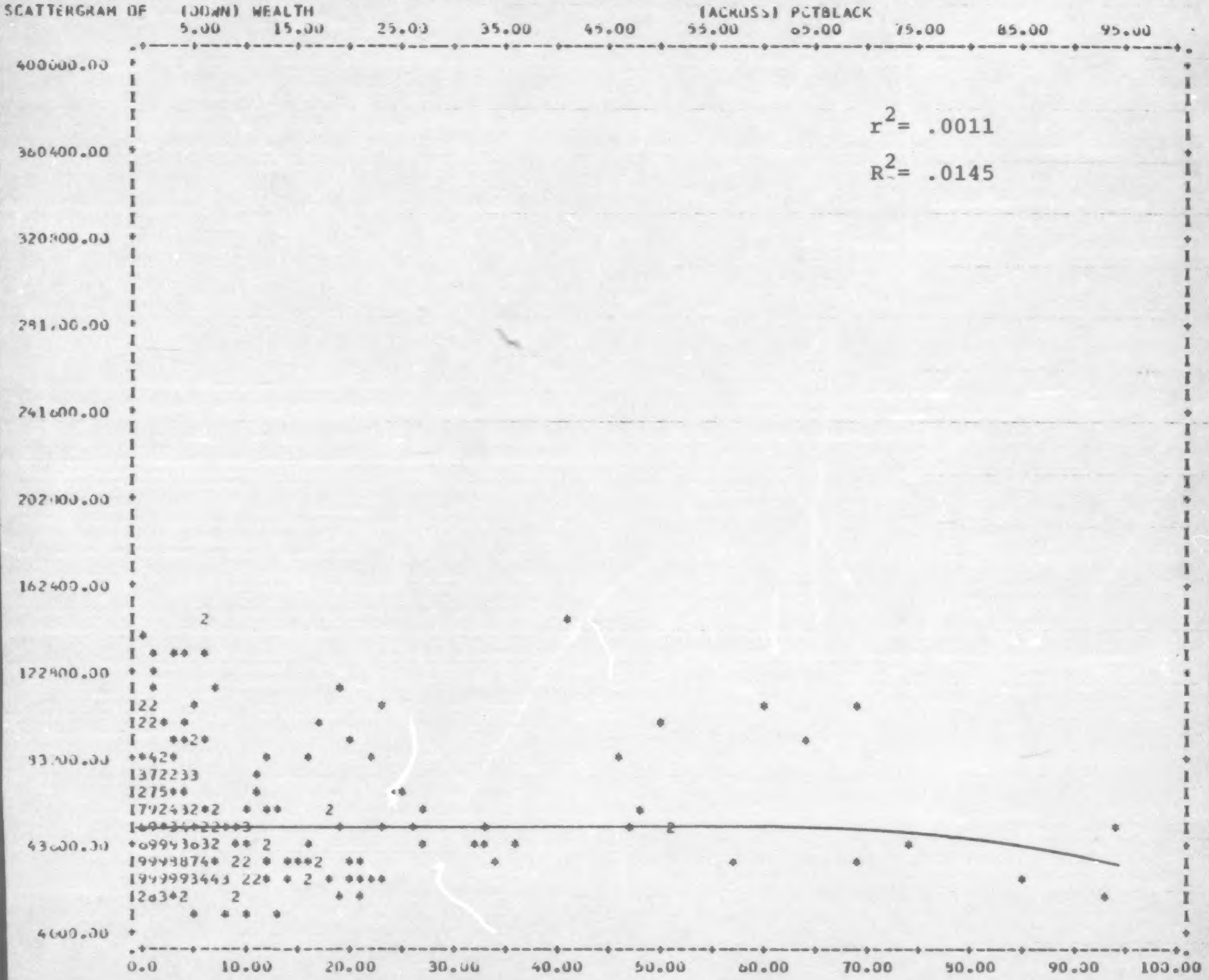
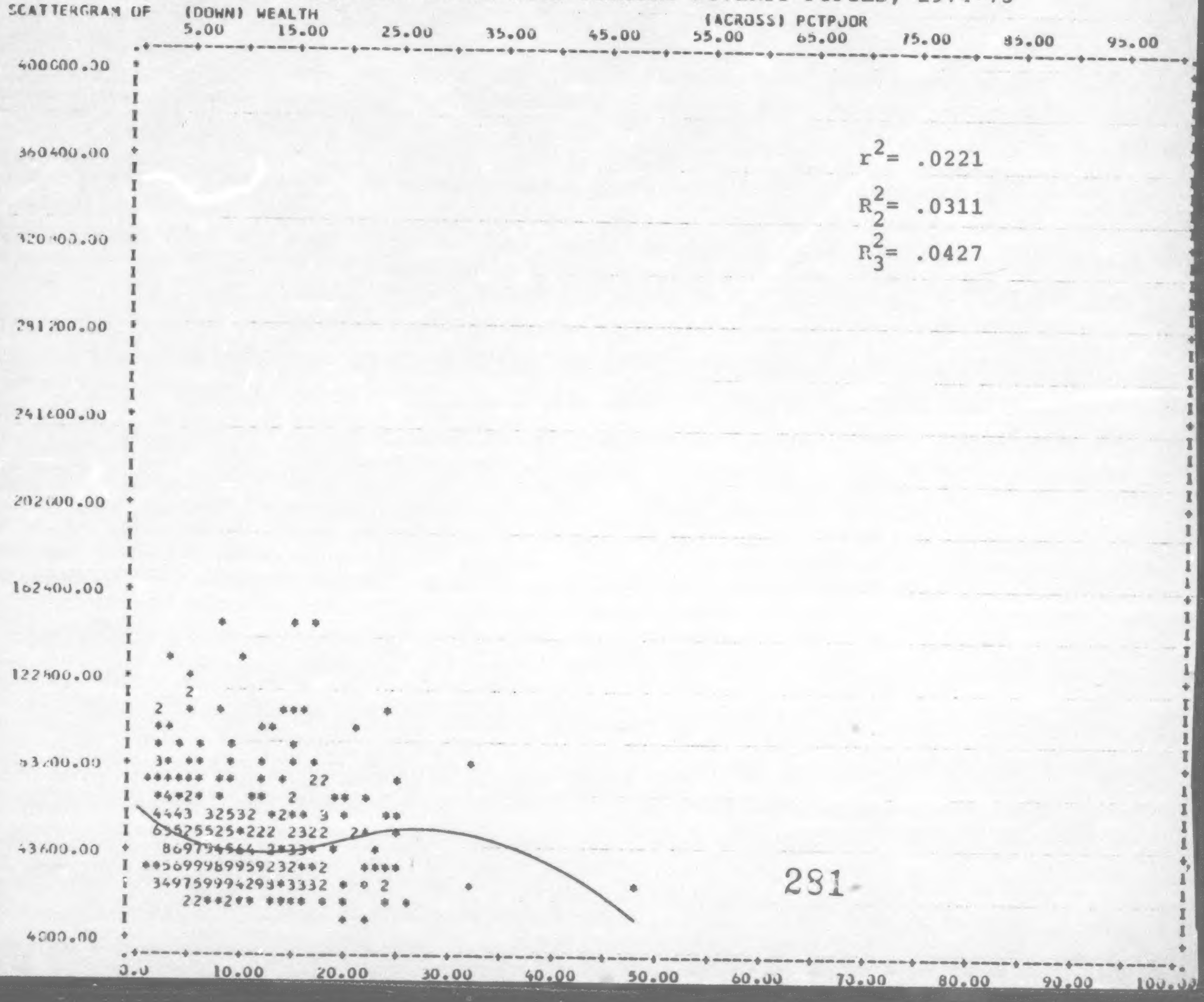


FIGURE 41

MICHIGAN SCHOOL DISTRICTS:
PROPERTY WEALTH PER PUPIL WITH PERCENT POVERTY PUPILS, 1974-75



$r^2 = .0221$

$R_2^2 = .0311$

$R_3^2 = .0427$

NEW MEXICO SCHOOL DISTRICTS

PROPERTY WEALTH PER PUPIL WITH PERCENT HISPANIC PUPILS, 1975-76

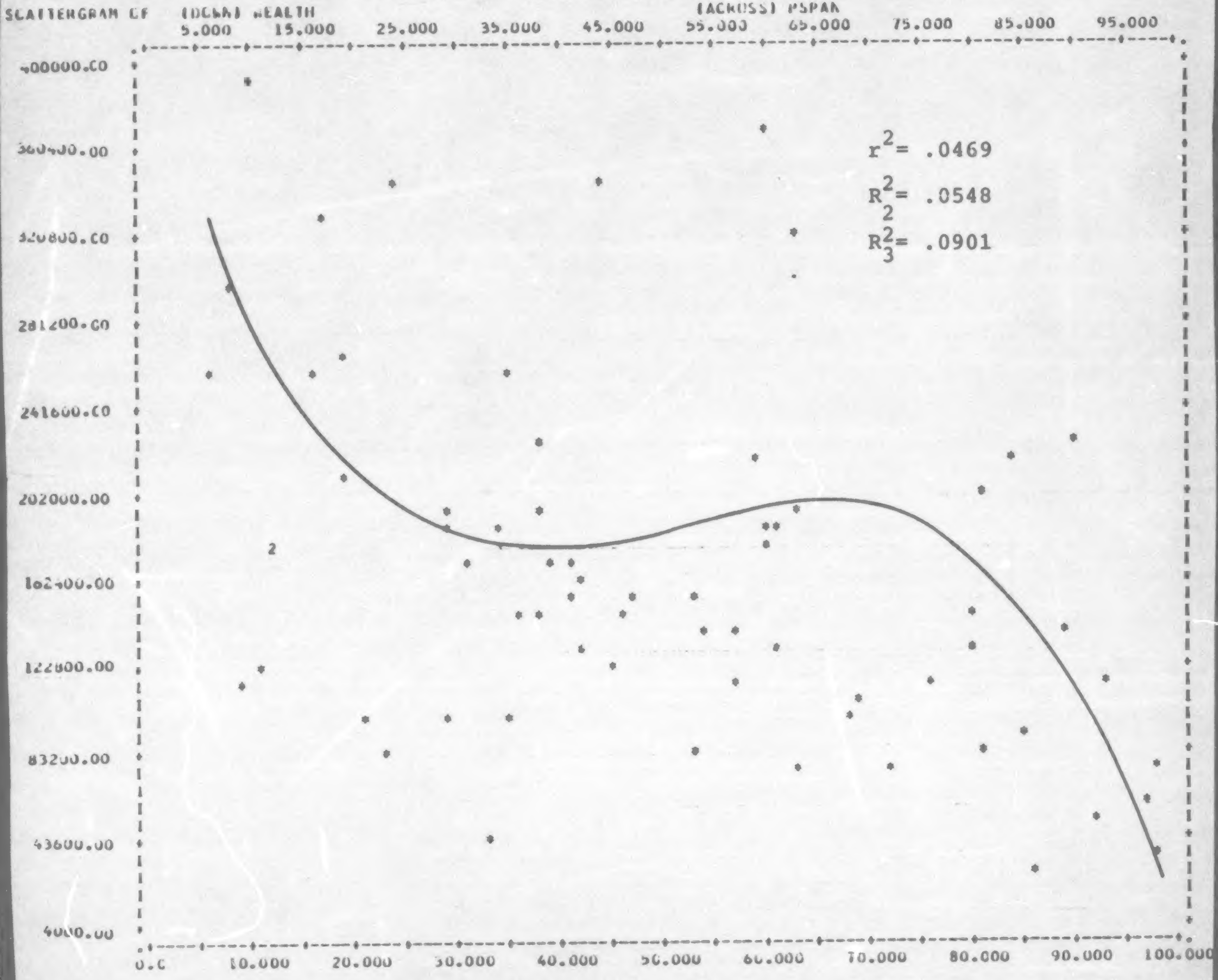
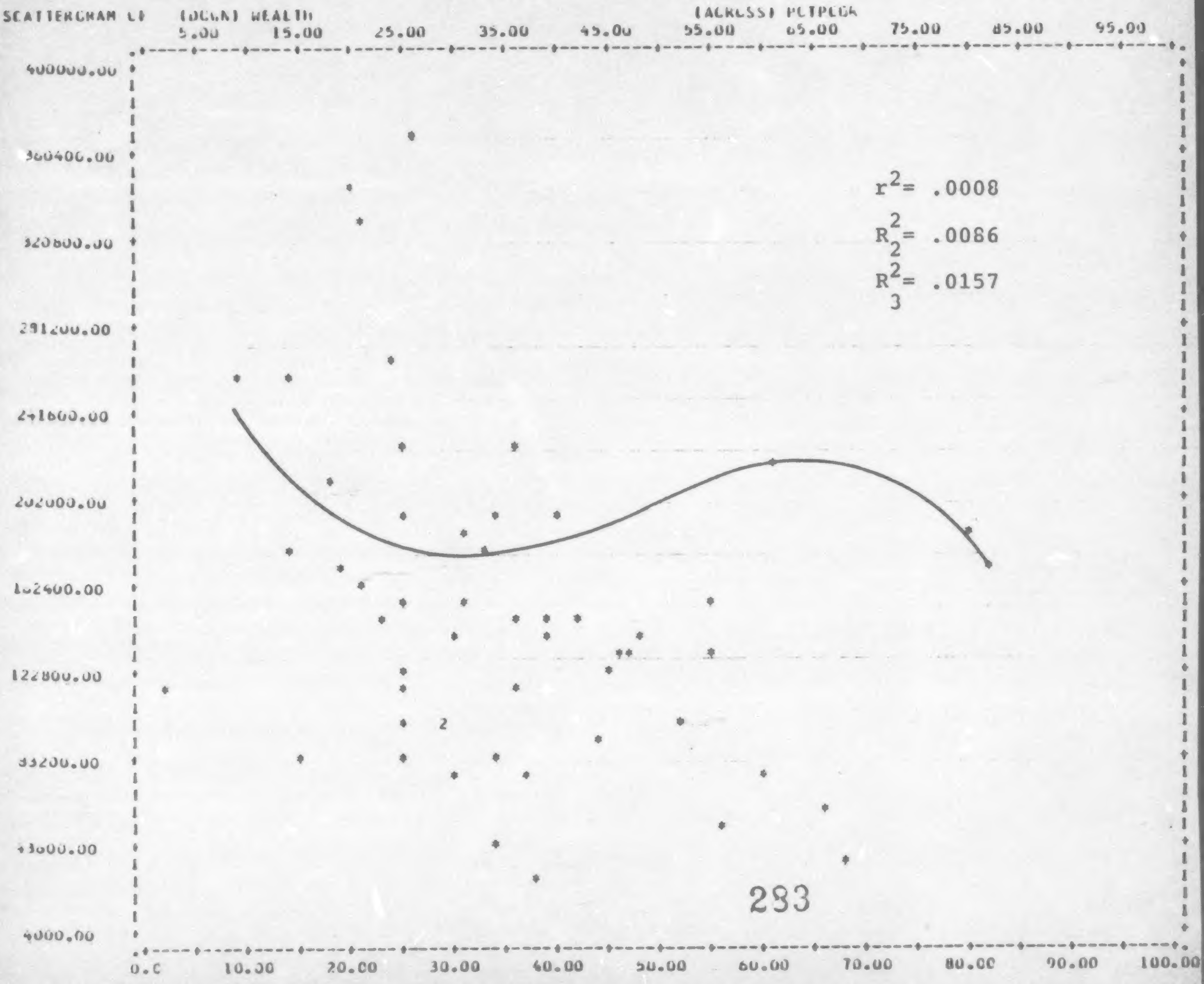
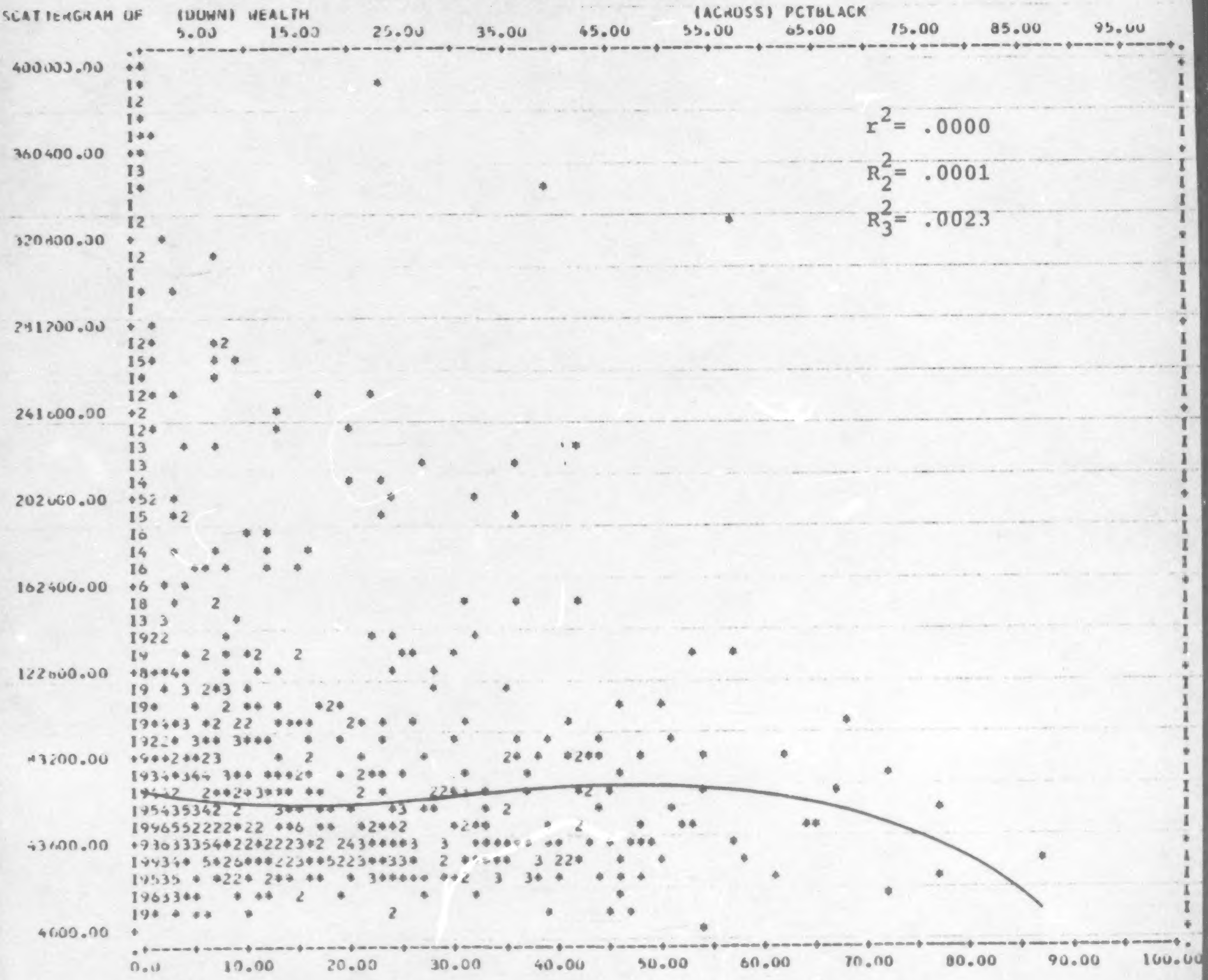


FIGURE 43

NEW MEXICO SCHOOL DISTRICTS:
PROPERTY WEALTH PER PUPIL WITH PERCENT POVERTY PUPILS ENROLLED, 1975-76



TEXAS SCHOOL DISTRICTS:
PROPERTY WEALTH PER PUPIL WITH PERCENT BLACK PUPILS, 1975-76



$r^2 = .0000$

$R_2^2 = .0001$

$R_3^2 = .0023$

FIGURE 45

TEXAS SCHOOL DISTRICTS:
PROPERTY WEALTH PER PUPIL WITH PERCENT MEXICAN-AMERICAN PUPILS, 1975-76

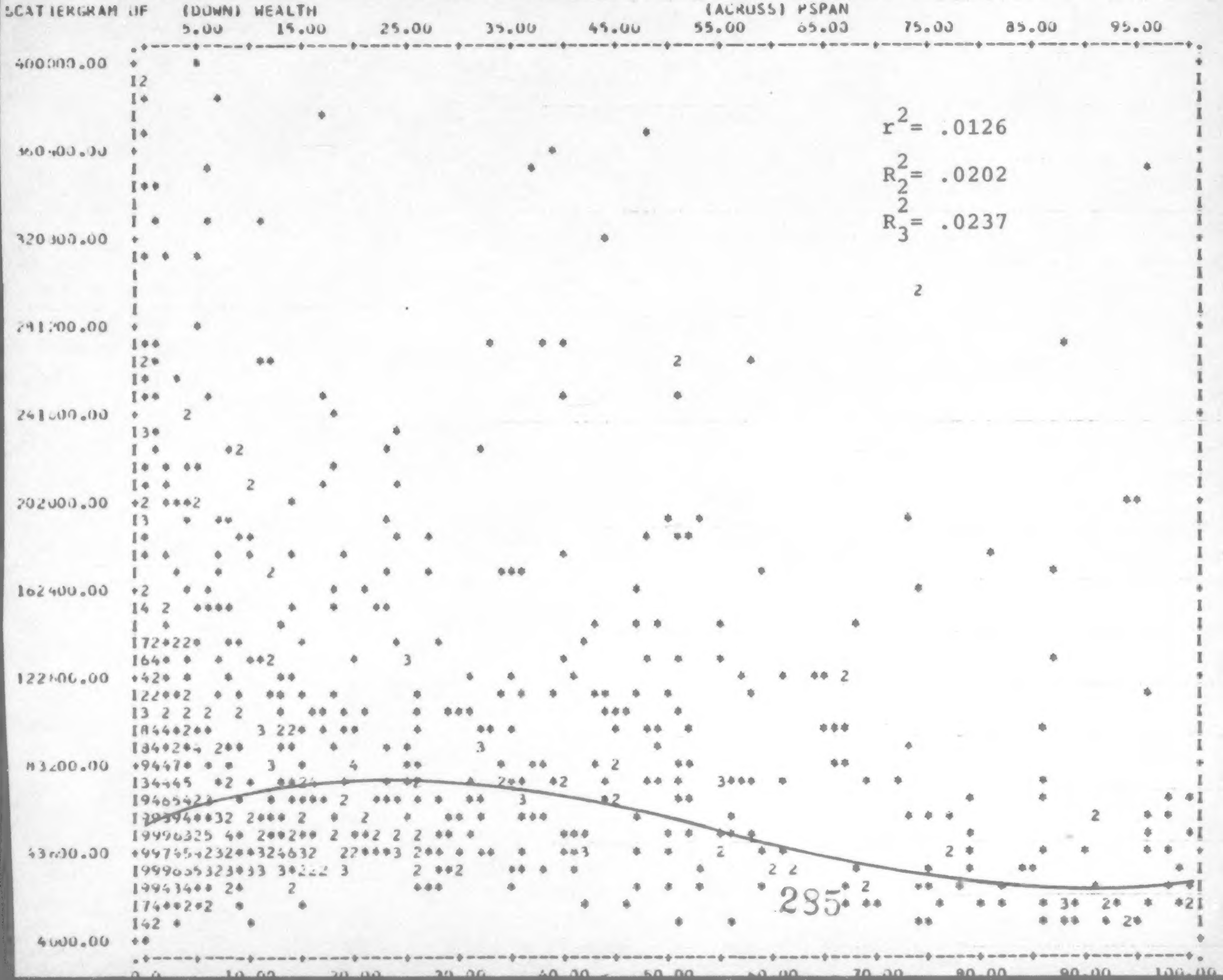
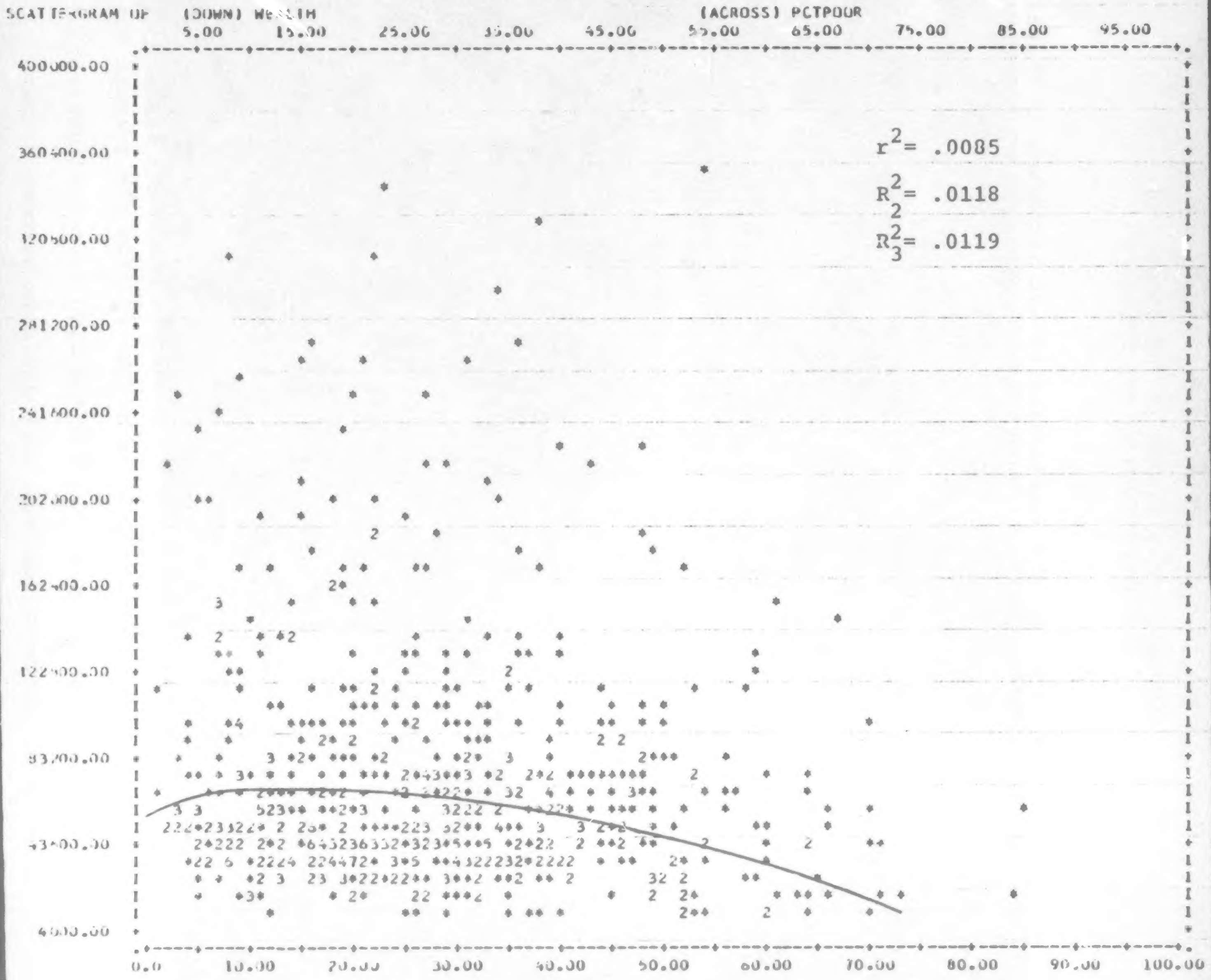


FIGURE 46

TEXAS SCHOOL DISTRICTS:
PROPERTY WEALTH PER PUPIL WITH PERCENT POVERTY PUPILS, 1975-76



APPENDIX B

METHODOLOGICAL ISSUES IN THE CONDUCT OF SCHOOL FINANCE EQUITY RESEARCH

In addition to the substantive issues discussed in Chapter 5, researchers should be informed about a number of methodological issues to be considered when conducting equity analyses. The issues discussed in this section are those which became particularly salient to us in our research on equity for poor and minority children. They are concerned with: the unit of observation, the unit of analysis, univariate measures of equity, bivariate measures of equity, multivariate measures of equity, analysis of trends and statistical inference.

Unit of Observation

The "unit of observation" refers to the basic unit on which data are collected while the "unit of analysis" describes the manner in which the data are combined in the analyses. Since the basic administrative and fiscal unit in most states is the school district, it is the unit on which most data are collected and thus the unit of observation. But analyses are conducted on pupils when pupil equity is of concern. Unfortunately, the usual bookkeeping and data gathering practices do not permit an examination of the amount of resources expended on each pupil; this can only be estimated from the average for the district as a whole. If the district is a particularly large and heterogeneous one, this estimate becomes rather questionable, especially when one wants to generalize about different groups of pupils within the district. Ecological correlations -- those based on areas as the units of observation -- are always subject to the "ecological fallacy" of incorrectly attributing behavior to individuals within areas on the basis of areawide data.[1] The ecological fallacy becomes less problematic when the area on which data are gathered (i.e., school districts) are fairly homogeneous within their boundaries and when the variation among districts on the variables being correlated is particularly large. Unfortunately, the amount of variation in percent minority or poverty in most states is not very great and the school districts are often large and heterogeneous. The result is generally a correlation which is deflated considerably from the value which would obtain from data on individual pupils.

The only solution to the problem of the ecological fallacy is to obtain data more closely tied to the unit with which the analysis is concerned--the pupil. Budget data by programs within schools, similar to that provided by the school-site budgeting plan in Florida, would be ideal for this purpose. After obtaining school-level data in Florida, we found considerable differences in the correlations between spending and percent ethnic group enrollment between district-level and school-level data.[2]

School-site budgeting is not available, however, in other states. But salary data are available on individual personnel in most states and can be aggregated to the school-site level. Pupil enrollments by ethnic group are also available by school sites from the HEW Office for Civil Rights Fall surveys. Combining these data would provide a valuable national data base for analyses within and across states. School-level data on enrollment by program by ethnic group--if it could be obtained with some consistency of program definition across states--would provide valuable information for the analysis of student assignment practices within schools. This would be an item for which federal guidelines might help in requiring consistent record keeping across states, especially in view of the fact that many of the programs for exceptional children receive federal funds.

Unit of Analysis

The above discussion dealt with the unit of observation--the basic unit for which data are obtained. As was pointed out, the unit of observation of school finance research is usually the school district, although it may be the individual school or classroom. In contrast, this section will discuss the unit to be described by the data, or concerning which inferences will be drawn from the data. In most social science research, the unit of observation and the unit of analysis are one and the same. However, this need not be the case, and school finance research is an area in particular in which one might not want these to be the same.

How might analyses be conducted in which the units of observation and analysis are different? Our study serves as an example of this. With the exception of the Florida school-level analysis, the school district is the unit of observation. However, when we analyzed the data, we weighted each district's data by the number of pupils in the district. Therefore, the analyses reflect how pupils fare, rather than districts, and the pupil is the unit of analysis.

Although we have consistently used the pupil as the unit of analysis, this is not by any means a uniformly accepted practice in school finance research. Many other recent investigators have used pupil weighting in their analyses; however, a number of investigators have used unit, or district, weights.

Unfortunately, very different conclusions may be drawn from the same data through pupil as compared with district weighting; this has been demonstrated in a number of studies. Grubb and Michelson found that the conclusions drawn from the districts analyses by the Supreme Court in the Rodriguez case that poor pupils are not located in property-poor districts might be contradicted if the analyses were conducted with pupil weightings in some states.[3] Wade demonstrated that in three of the four states he examined, the tendency was for the direction of the relationship between poverty concentration and district property wealth to become more positive when pupil was the unit of analysis since large urban districts, which generally above average in property wealth, influence the analyses more when weighted by the number of pupils.[4] Berne's research with the School Finance Cooperative's equity monitoring effort used different units of analysis and found "far more than trivial contradictions among nine wealth neutrality measures and between units of analysis when these measures are utilized to determine whether a state has become more or less wealth neutral over time."[5] Our research also revealed marked differences in results when using the pupil, as compared with the district, as the unit of analysis.

On a conceptual basis, our preference is for pupil rather than district weighting in research on equity in school finance. The primary reason for this is that, in research of this type, we are usually more interested in seeing how pupils, rather than districts, fare. For example, in most school finance court cases, the injured parties who bring suit are pupils, usually as a class. We recognize that other investigators will approach school finance research with different theoretical conceptions which may lead to use of district as the unit of analysis. If so, two important caveats are offered. First, it is unsound to conduct both types of analyses and report just the results which are most favorable to one's position. Secondly, because both pupil and district weightings are so widespread in school finance research, all investigators should specify which approach was used.

In addition to conceptual considerations, practical considerations also bear on the questions of whether to use pupil or district weighting, or weighting of some other sort. For example, some states, such as Texas, have districts which are extremely small (as few as two or three students) and which have extremely high values on some school finance variables. (In Texas, extremely small districts generally have extremely high property values per pupil.) The use of district as the unit of analysis in Texas would allow these extremely small and wealthy districts to influence the overall analyses and summary statistics to a degree which seems unwarranted due to the small numbers of students involved. This type of situation seems to be one in which pupil weighting should be used. However, the opposite problem is encountered in some states. In such states, one extremely large district which contains a high proportion of all of the students in the state, overwhelms the rest of the districts in its influence on the statistical results. An example of such a state if Michigan, where the Detroit school district contains 52 percent of all minority students in the state.

We are proposing a possible solution to the second problem discussed above. We have not tested this solution, but it might be useful to future researchers. Our suggestion is to weight the analyses, not directly by the numbers of pupils in the various districts, but by a nonlinear function of the pupil count. This function would be defined so that weights for small districts would be close to their actual numbers of pupils, but large districts would be weighted much less than their pupil enrollments. Any number of different functions might serve the purpose. One possibility is to weight by the square root of the number of pupils. Again, we have not tried this approach but it is one that might be useful.

Univariate Measures of Equity

The problems of inadequate definition of concepts discussed in the section on substantive issues can be found manifested in inadequate measurement. Perhaps because pupil needs and educational costs have not been identified and defined conceptually, we have no good operational definitions of them. Thus, researchers evaluating the equity consequences of school finance systems often fall back on the use of univariate equality measures. Such a practice can lead to erroneous conclusions concerning equity.

The fact is that measures of inequality such as the variance, the coefficient of variation, the gini coefficient and the relative mean deviation indicate only the degree of dispersion in a distribution, which is not necessarily the amount of inequity in the system. For example, if equity is defined as the unequal distribution of resources to pupils whose needs are different, an increase in the coefficient of variation from one year to the next may indicate a trend toward more adequate provision for the varied needs of pupils rather than toward greater inequity. The problem is, we simply do not know which is the case unless adjustments are made in the measures for the varied educational needs of pupils. Equity analysts will not be able to make sense out of the results of these univariate measures and will continue to draw erroneous conclusions from them until such time as need (and price) differentials and adequately determined and controlled.

Bivariate Measures of Equity

The only bivariate equity measures which have gained widespread use among researchers to date are fiscal neutrality measures. These measures reflect the concern of the majority of reform efforts during the seventies, a concern which springs from the Serrano mandate to eliminate wealth discrimination. Few criteria for insuring equity in funding education for poor and minority children have been adopted by either the courts or the lawmakers and, as a result, the measurement of equity for these groups has progressed at a snail's pace.[6] There have been occasional attempts at explaining the variations in educational funding for pupils in districts of different minority and poverty concentration.[7] We have learned from our own research in this area that the results of these types of analyses must be interpreted with caution in view of the limitations of the data and of the measures used in the analyses. We discussed limitations of the data measuring ethnic and poverty concentration by school district boundaries above. We will now address issues related to the measures used in these analyses.

The most frequently used single-number index of the bivariate relationship between school finance resources and ethnic concentration is the Pearson product-moment correlation coefficient (_r_). One limitation of the Pearson correlation is that it indicates only the relative strength or consistency of the linear covariation of two variables. We can show how much change in revenue is associated with a unit change in percent ethnic by computing the slope of the regression line (the regression coefficient, _b_). Another limitation of the Pearsonian _r_ is that it is a linear measure only. Hence, an _r_ of zero indicates that no consistent _linear_ association is found between ethnic concentration and the resource measure. This may mean there is no consistent pattern of association at all between the two variables or that some non-linear relationship exists. Most research stops here without clarifying the nature of the association. For example, in two of the six states in our study, we found that districts with low and very high percentages of Black pupils had relatively low local plus state revenue levels compared to districts with moderate percentages of Blacks. The Pearson correlation coefficient between revenues and percent Black was almost zero, but there was a clear curvelinear pattern in the relationship. A very useful association measure which is sensitive to non-linear as well as linear relationships is _Eta_. The independent variable (in this case percent minority or poor) must first be divided into categories and the dependent variable (revenues or expenditures) remains a ratio-scale measure. *Eta*^{2} can be interpreted as the proportion by which error is reduced in predicting revenue (or expenditure) level given knowledge of the category of percent minority (or poverty).

For future research, in view of the non-linear nature of empirical reality, it would be wise to not simply settle for linear measures of association such as the Pearson correlation coefficient. The procedure in conducting bivariate analyses might be to divide the ethnic concentration variable into categories (say, deciles of pupils) and compute means within each category. Then, *etas* would be computed and compared with the Pearsonian *r*'s. If an *eta* value is considerably greater than the Pearson *r*, this would indicate that a non-linear association exists. The decile means would also provide a visual display of the shape of the bivariate distribution relating the resource measure and ethnic concentration when values are plotted on a set of X-Y coordinates. This will indicate whether the distribution approximates a normal distribution or is skewed. Another approach to identifying non-linear relationships between revenues or expenditures, and ethnic concentration is to add squared and cubed terms of percent minority enrollment to the regression equation.

A different approach to "separating out" minorities and the poor from other students to determine their share of the educational resources is to compute ethnic (or poverty) group statewide means. This involves simply weighting the per pupil revenue or expenditure value for each district by the number of ethnic group members in that district and averaging across all districts. We found this method to be particularly useful for intergroup comparisons only if the ethnic or income group as a whole was isolated to some extent from the majority group. An ethnic group which is fairly evenly distributed throughout the state, of course, would not be different from the average student in the state. For cross-state and cross-year comparisons, the ethnic or income group mean expenditure can be divided by the state average per pupil expenditure to yield a ratio. As with the other analyses, caution must be exercised while interpreting expenditure or revenue data which includes "categoricals." Ethnic and poverty groups would be receiving greater categorical aid because of their exceptional needs and as such we would anticipate greater than average expenditure levels for these groups. These ethnic and income group means might also be computed within categories of districts, such as different community locales: urban, suburban and non-metropolitan districts.

Bivariate measures, while they provide a simplified way of describing the distribution of resources among districts of different ethnic composition, are of limited value in accounting for the relationships which they reveal. The fact that expenditures are directly related to percent Black pupils enrolled may be a result of greater tax effort on the part of districts with high percent Black pupils or it might be due to the fact that those districts have a greater amount of property wealth per pupil, or any number of a variety of factors which may in turn be related to Black concentration. The point is that with only bivariate measures, we simply do not know why the relationship exists, only that it does exist. We can use bivariate measures to describe the relationship between ethnic or poverty group concentration and educational resources among the variables, but we cannot adequately explain these relationships without taking into consideration other variables which may be influencing them. This requires some type of multivariate analysis.

Multivariate Measures of Equity

By multivariate analyses, we refer mainly to analyses involving more than one independent variable (as contrasted with the more conventional use of this phrase to refer to analyses with multiple dependent variables). We do not denegrate the value of statistical analysis techniques which involve multiple dependent variables; however, such statistical techniques can be difficult to explain to nontechnical audiences. The most powerful and widely-used statistical technique for multivariate analyses, as advocated here, is multiple regression.

In its most basic form, multiple regression allows identification of "optimal" equations relating multiple predictors to a criterion. Variations of this statistical technique allow examination of the extent to which the relationship between a predictor and a criterion may be attributable to another predictor. (This is the general approach that we have used--see

Chapter 3). We have found multiple regression to be a useful technique. However, we will present several cautions which should be observed in the use of multiple regression.

It is very tempting to interpret the weights assigned to the various predictors in a multiple regression analysis as representing the relative contributions of the predictors to the criterion. This interpretation can be valid, but only under certain important restrictions. The actual values of the regression weights depend not only on the relationships of the predictors with the criterion, but on the interrelationships among the predictors as well. The addition or removal of predictors to the regression, or changes in the relationships among the predictors, can have large effects on magnitudes and signs of the regression weights. Therefore, regression weights can only be interpreted within the context of the particular set of variables for which they were computed.

Another problem with multiple regression is that of regression weights with opposite signs of the correlations with the criterion. This situation is likely to occur when very high correlations are found amoung predictors in a regression analysis. We found the problem of predictor-criterion correlations and regression weights of opposite signs to be quite common in our school finance data. Interpretation of results in this situation can be difficult if not impossible.

Time Series Analysis

One approach for the analysis of school finance data which might prove profitable is the analysis of time series. Actually, statistical time series analysis encompasses a variety of specific techniques, any of which might be useful. However, one approach, in particular, has a great deal of potential for studies such as ours, and that approach will be described in some detail here.

This first step in this approach is to find an equation relating year, as the independent variable, to amount of school revenues, as the dependent variable. Such an equation might be linear. However, with the yearly increase in overall inflation rate, the equation may assume some other form, such as quadratic. The result of this step will be useful for examining long-term, consistent trends in education revenue availability.

The next step is useful for examining possible effects of major change in the funding system which took place in a particular year. This the situation in our study, we looked at impacts of major reforms in state school funding laws. In the second step, two new variables are created. The first equals zero for all pre-reform years and one for all post-reform years, and the second is the product of the first new variable and the year variable.

Two sets of regression analysis are done. For the first, the independent variables are year and the first new variable. The second regression analysis uses these two independent variables, as well as the second new variable. If either or both of these regression analyses results in significant better prediction (R^2) than the regression in step one, the reform had a significant impact over and above the consistent yearly trend. If neither of the step two regressions result in higher R^2 than the step one regression, the reform did not have a significant impact over and above the consistent yearly trend.

In order to perform these analyses, data for several years, both before and after the reform, are necessary. Because we did not have sufficient data, we did not conduct this type of analysis. However, we feel that this approach could be useful in future research.

Statistical Inference

A final issue regarding the conduct of equity analyses is whether or not tests of statistical significance should be performed in addition to measuring the magnitude of the inequity. Statistical inference tests are seldom employed in school finance research, but we are hard pressed to explain just why they are left out. We suspect that it is due in part to the tendency to keep the analyses simple for consumption by policymakers and the informed public. Another reason might be that, since the data are usually not viewed as sample data, statistical inference is not viewed as necessary. One might argue that all differences found in the measures are real differences and not due to sampling error. We feel quite differently that inferences are frequently being made in research on school finance equity

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and that statistical tests can contribute by giving scientific justification for making inferences in lieu of careless prognostication. Too frequently the temptation is to cry "Eureka!" over small differences which when viewed in the light of statistical tests would be found to be insignificant.

The amount of school revenue received by a particular school district is completely determined and is measured with high accuracy. However, many factors determine this amount of revenue beyond those under consideration in the present study--ethnic group and poor group membership. An attempt has been made to control some of these other factors in the present study. However, many have not been controlled and, in fact, have not even been identified. Many of these factors act in ways which are unrelated to the independent variables of the present study and which are, in effect, unpredictable given the present state of knowledge. These factors add "noise" to the data.[10]

What sorts of inferences might one want to make from data on all school districts in one particular year? The primary kinds of inferences usually made are to groups of districts which are "like" the sample except that the extraneous, uncontrolled factors which determine, in part, school revenues are different. For example, in Florida, the revenue received by a school district from the state includes, in addition to the computed from the funding formula, revenue from "prior year adjustments," errors in arithmetic, student counts, etc. Also, Florida school districts receive revenue from racetracks located within the districts. Variations in revenues from these two sources between districts and within a district across years are likely to function as "noise" in the analyses. We want to be able to say, for example, that differences in local revenue per pupil found among districts with varying concentrations of Spanish-background pupils are "attributable" to differences in the independent variables, and not due to fortuitous (or unfortuitous) variations in uncontrolled and unexamined variables such as prior year errors and racetrack prosperity. We want to be able to generalize results to a conceptual population of school districts which are similar to those for which data are available but which differ on many other "irrelevant", or at least unobserved, variables. The use of statistical inference techniques allow assessment of the generalizability or the replicability of the results obtained from the available data.

Having stated the overall rationale for use of statistical inference techniques in the present study, attention will now be given to the particular statistical inference techniques used in this study and the assumptions and requirements of those techniques.

The two main statistical inference techniques used here are regression/correlation and the analysis of variance (ANOVA). It is well known that the analysis of variance is simply a special case of multiple regression; the following discussion applies to both techniques.

The main general assumptions required for regression and ANOVA are listed below in nonrigorous form.[11]

(1) Deviations from predicted values of the dependent variables are distributed normally with population means of zero. This means simply that the data must be distributed normally around means (averages) of groups based on the independent variable(s).

(2) Population variances of deviations from predicted values of the dependent variable are equal for all values of the independent variable(s). This is the homoscedasticity assumption and requires that within-group variances of all groups based on the independent variable(s) be equal.

(3) The deviation from predicted value of the dependent variable for any observation is independent of the deviation for any other observation. The concept of independence can sometimes be difficult to appreciate. This concept will be illustrated with two simple examples. Suppose we shuffle (thoroughly) a deck of cards and draw one at random. After replacing the card, we repeat the process. The two card selections are independent events; the probability of drawing any particular card onthe second draw is unaffected by the outcome of the first draw. Now, suppose we do not replace the card selected on the first draw in the deck before we draw our second card. The two draws are now not independent. The probability of drawing the same card on both draws is now zero (we cannot select the same card on the second draw because it is no longer in the deck after the first draw), while the probability of drawing any other card is slightly increased (because fewer cards are in the deck on the second draw).

These assumptions, which are necessary for derivation of the statistical techniques used here, may seem very strict. One might argue that nonparametric statistical techniques should be used, rather than regression and analysis of variance. However, nonparametric techniques make little use of the strong metric information on the present data, which consists primarily of amounts of money, and numbers and percentages of students. Also, as will be seen below, regression and analysis of variance are, in practice, quite robust against violations of these assumptions.

Violations of the normality assumption, except perhaps in extreme cases (extreme distributions and small sample sizes) do not invalidate the practical use of regression and analysis of variance. A number of empirical studies have shown that the sampling distribution of the F statistic, the main test statistic in regression and analysis of variance, shows little effect from deviations from normality.[12] In one such study,[13] null hypothesis F-ratios significant at the 5 percent level were found between 4.76 and 7.83 percent of the time under various non-normal distribution, contrasted with the occurrence of significant (.05 level) F ratios 5.6 percent of the time under the normal distribution.

Similarly, moderate departures from equality of the deviation variances (assumption 2) do not seriously effect the sampling distribution of the F statistic.[14] The following table illustrates the magnitudes of the effects of violation of the homogeniety of variance assumption:[15]

Population Variance

	Sample 1	Sample 2	Sample 3	p^1
Case 1	1	1	1	5.0%
Case 2	1	2	3	5.8%
Case 3	1	1	3	5.9%

Note: for each sample, the number of subjects was 15.

[1] Proportion of obtained F-ratios greater than $F_{.05}$ under the null hypothesis.

This table presents results of a simulation study in which samples were repeatedly drawn from populations with the variances specified in the table, under null hypothesis conditions. The proportion of trials in which the null hypothesis was rejected at the .05 level is reported. The variances are homogeneous in case 1, and it may be seen that the actual proportion of samples in which significant F-ratios were obtained is exactly equal to the theoretical proportion. In case 2, the three variances are different; the largest is three times the smallest, while the middle is twice the smallest. In case 3, two of the variances are equal, while the third is grossly different. In both of these cases, the actual proportion of trials in which the F ratio was significant is very close to the theoretical proportion, demonstrating that, for practical purposes, large violations of the variance homogeniety assumption have little effect on the outcome of the ANOVA, even with small sample sizes. When the cell n's get very unequal, the bias becomes larger and the direction of the bias is not always positive.[16] However, except under extreme conditions, the amount of bias is not unacceptable.

In contrast with the first two assumptions, violations of the independence assumption (number three) are significant. It is clear that the observations of the present study, school districts, are reasonably independent, and therefore, this assumption appears to be met. However, the effects of pupil weighting, such as used in the present study, on regression and ANOVA are not known. For the present purposes, the risks of the weighting procedure seem worthwhile. In fact, the use of pupil weighting has become widespread in school finance research. The present authors believe that the effects of pupil weighting on significance tests in regression and ANOVA should be investigated in the future.

Determining Degrees of Freedom

An important aspect of conducting statistical tests in ANOVA and regression is determining the appropriate degrees of freedom. Designs used in the present study were relatively straightforward; apportioning degrees of freedom among the various effects and error terms presented no real problems. However, determination of total degrees of freedom was another story. As was mentioned above, the unit of analysis for the present study was the individual student. Data was, however, available only at the school district level (and, in Flroida, also at the school level). The assumption was made that within-district differences among students were not important. In order to obtain results equivalent to individual student analyses, each district was weighted by its number of students. If actual numbers of students had been used as the weights, the total degrees of freedom in the statistical tests would have been in the millions in some states and the null hypothesis would have always been rejected, even though the actual number of independent observations, the numbers of districts, ranged between 67 (Florida) and 1095 (Texas). Therefore, the weights were adjusted so that their sum across all districts in a state was equal to the number of districts, while keeping each district's weight proportional to its number of students. This was accomplished by dividing each district's number of students by the statewide mean number of pupils.

In the above discussion, a general rationale has been given for use of statistical inference techniques in the present study. It was argued that in the present study, and other research of this type, investigators want to be able to generalize at least to a conceptual population of school districts of which the actual data represent a sample. It was then argued that regression and ANOVA are appropriate types of analysis for use in the present study. Although these techniques have strong assumptions, violations of these assumptions have little effect on the practical value of the techniques.

FOOTNOTES TO APPENDIX B

1. For a discussion of the "ecological fallacy", see: William Stewart Robinson, "Ecological Correlations and the Behavior of Individuals", American Sociological Review 15 (June, 1950), pp. 351-357.

2. See Chapter 4 of our report for a discussion of the differences found when using school vs. district level data.

3. W. Norton Grubb and Stephen Michelson, "Public School Finance in a Post-Serrano World", Harvard Civil Rights Civil Liberties Law Review 8 (May, 1973), pp. 550-570.

4. Jerry Wade, "School Finance Propoerty Tax Reform," paper presented at the 1975 Annual meeting of the South Western Social Science Association, March 26-29, pp. 27-32.

5. Robert Berne, A Methodological Assessment of Education Equality and Wealth Neutrality Measures, a report to the School Finance Cooperative, New York University Graduate School of Public Administration, July, 1978, p. 67.

6. But should researchers wait for legislators and judges to define their tasks? We think not. Researchers will undoubtedly be forced to make their own value judgments about what measures are the most telling indicators, but their judgments will hopefully be based more on the results of empirical research than upon political imperatives. An excellent forerunner to such an effort is the School Finance Cooperative, a voluntary association of researchers and policymakers organized by the National Institute of Education and the Ford Foundation. They meet occassionally to plan inter-state comparative studies monitoring school finance equity. See the report by Berne, ibid.

7. For bivariate analyses, see: Robert Brischetto and Tomas Arciniega, Inequalities in Educational Resources: Their Impact on Minorities and the Poor in Texas and California, A Report to the National Institute of Education, D-HEW (San Antonio, Texas: Our Lady of the Lake College, 1974, offset); Robert Brischetto and Tomas Arciniega, Inequalities in Educational Opportunity and the Chicano: A Study of School Systems in the Southwest, A Report to the National Institute of Education, D-HEW (El Paso, Texas: The University of Texas at El Paso, 1973, offset); James W. Guthrie, B. Kliendorfer, Henry M. Levin and Robert T. Stout, Schools and Inequality (Cambridge, Mass.: The MIT Press, 1971). For multivariate analyses see: Walter I. Garms, Measuring the Equity of School Finance Systems, A Report to the National Institute of Education, D-HEW (Rochester, N.Y.: University of Rochester, 1978, mimeo).

8. See also: Denton E. Morrison and Ramon E. Henkel (eds.) *The Significance Test Controversy*: A Reader. (Chicago, Ill.: Aldine, 1970).

9. For a detailed guide to the analyses conducted in our research on the impact of school finance reforms on minorities and the poor, see: Appendix C of this report.

10. On the surface, this situation may appear to be fairly novel. However, it is little different from that normally encountered in statistical data analysis. Consider, for example, coin flipping. It is not unreasonable to believe that the outcome of a coin flip is completely determined through physical mechanisms and, therefore, could be predicted with complete accuracy, given sufficient information. However, such predictions are not possible given today's "state of the art," and therefore, statistical inference techniques, which allow us to deal with uncertainty, are appropriate and useful.

11. B. J. Winer, *Statistical Principles in Experimental Design*, (New York: McGraw-Hill, 1962).

12. *Ibid*.

13. Cited by Winer, *ibid*.

14. *Ibid*.

15. Cited by Winer, *ibid*.

16. *Ibid*.

APPENDIX C

A STEP-BY-STEP DESCRIPTION OF STATISTICAL ANALYSES IN AN NIE STUDY:

MINORITIES, THE POOR AND SCHOOL FINANCE REFORM

Results of a great many statistical analyses are presented in this report. The reader may wish to understand precisely how these analyses were conducted. For practical reasons, complete details were often not presented in the text. The purpose of this appendix is to provide those details.

All analyses reported in this study were accomplished using computer programs from the Statistical Package for the Social Sciences (SPSS). Presented below is a plan which was developed at the outset of this study for using SPSS to conduct the required statistical analyses. This plan, which has been updated, provides a complete and precise description of how the analyses were conducted.

The Research Questions listed below correspond in number and order to those which appear in the technical analysis plan and original proposal for this study. They do not always correspond to the numbering and ordering of the research questions as they are presented in the report of our findings.

The following conventions will be used in control card examples:

1. Upper case letters will represent text to be punched on the computer cards.
2. Lower case text will represent comment to the reader and are not to be punched on computer cards.

3. Lower case text which is underlined represent constants (numbers) and should be replaced with the actual number on the computer cards.
4. When a variable name is defined, it will be used throughout the text in the defined manner.

Standard File

Most of the changes to be presented here are related to the fact that the standard files for all the states studied so far have a different structure than was originally envisioned. In the standard file, as now structured, data for a given district for all years are contained in a single "case". This necessitates matching of districts over years. The structure of the standard file is illustrated below:

district 1 year 1, year 2, year 3, . . . (each line is one case)
district 2 year 1, year 2, year 3, . . .
°
°
°
last district year 1, year 2, year 3, . . .

This standard file will have no subfile structure except in situations such as California, where districts of different types are to be analyzed separately. In this case, all districts of each type can be sorted together into subfile groupings. This will reduce the number of SPSS control cards to perform the analyses.

Special ANOVA Files

The structure of the special ANOVA files remains unchanged; this structure is illustrated below:

year 1, district 1 anglos
year 1, district 2, anglos
o
o
o
year 1, last district, anglos
year 1, district 1, blacks
o
o
o
year 1, last district, blacks
year 1, district 1, spanish-background
o
o
o
year 1, last district, spanish-background,

year 1 subfile

year 2, district 1, anglos
o
o
o
year 2, last district anglos
year 2, district 1, blacks
year 2, last district, blacks
year 2, district 1, spanish-background
o
o
o
year 2, last district, spanish-background

year 2 subfile

o
o
o

last year, district 1, anglos
o
o
o
last year, last district, spanish-backgrounds

last year subfile

The ethnic group designations in the above illustration indicate the ethnic group used to weight each case.

Let PUPILS be the variable containing the weights for the cases in the special ethnic ANOVA file. Let ANGLADA1, ANGLADA2, ANGLADA3, BLAKADA1, . . . SPANADA1 . . . be variables in the standard file containing the nubmers of ADA of the various ethnic groups in each district. Finally, let *meanada1*, *meanada2*, and *meanada3* be *constants* equal to the statewide mean ADAs for the three years in which data are assumed to be available in the present example. Let Y11, Y12 . . . Y1K, Y21, Y22, . . . Y2K, Y31, Y32, . . . Y3K be variables for years 1, 2, and 3 in the standard file which are to be included in the special ANOVA file. The following control cards may be used to create a *raw output file* meeting the requirements. An SPSS file may be created from this raw file:

```
RUN NAME            CREATE SPECIAL ANOVA FILE FOR ETHNIC GROUPS
GET FILE            STANDARD
COMPUTE             ANGLADA1 = ANGLADA1 / meanada1
COMPUTE             BLAKADA1 = BLAKADA1 / meanada1
COMPUTE             SPANADA1 = SPANADA1 / meanada1
COMPUTE             ANGLADA2 = ANGLADA2 / meanada2
  o
  o
  o
COMPUTE             ANGLADA3 = ANGLADA3 / meanada3
  o
  o
  o
COMPUTE             SPANADA3 = SPANADA3 / meanada3
*COMPUTE            YEAR = 1
*COMPUTE            ETHNIC = 1
*COMPUTE            PUPILS = ANGLADA1
WRITE CASES         (F8.3,2F1.0, . . .)PUPILS, YEAR, ETHNIC, Y11,
                    Y12, . . . Y1K
*COMPUTE            YEAR = 1
*COMPUTE            ETHNIC = 2
*COMPUTE            PUPILS = BLAKADA1
WRITE CASES         (same as above)
*COMPUTE            YEAR = 1
*COMPUTE            ETHNIC = 3
*COMPUTE            PUPILS = SPANADA1
WRITE CASES         (same as above)
*COMPUTE            YEAR = 2
*COMPUTE            ETHNIC = 1
*COMPUTE            PUPILS = ANGLADA2
WRITE CASES         (F8.3, 2F1.0, . . .) PUPILS, YEAR, ETHNIC, Y21,
                    Y22, . . . Y2K
```

```
*COMPUTE            YEAR = 2
*COMPUTE            ETHNIC = 2
*COMPUTE            PUPILS = BLAKADA2
WRITE CASES         (same as above)
   o
   o
   o
*COMPUTE            YEAR = 3
*COMPUTE            ETHNIC = 3
*COMPUTE            PUPILS = SPANADA3
WRITE CASES         (F8.3, 2F1.0, . . .) PUPILS, ETHNIC, YEAR, Y31,
                    Y32, . . . Y3K
FINISH
```

Note that a Job Control Language (JCL) card is necessary to define the raw output file that all this will be put on. For an IBM 360/370, the necessary card would begin //FT09F001 DD . . . On another run, this raw file should be converted to an SPSS system file, in which all the data for a given year will constitute one subfile.

Similar control cards are used to create a special poor ANOVA file. Let POORAD1, POORAD2, and POORAD3 be numbers of poor students in ADA for the three years and NPOORAD1, NPOORAD2, and NPOORAD3 be numbers of nonpoor students. The following control cards may be used:

```
RUN NAME            CREATE SPECIAL ANOVA FILE FOR POOR-NON POOR GROUPS
GET FILE            STANDARD
COMPUTE             POORAD1 = POORAD1 / meanada1
COMPUTE             NPOORAD1 = NPOORAD1 / meanada1
COMPUTE             POORAD2 = POORAD2 / meanada2
   o
   o
   o
COMPUTE             NPOORAD3 = NPOORAD3 / meanada3
*COMPUTE            YEAR = 1
*COMPUTE            POOR = 1
*COMPUTE            PUPILS = POORAD1
WRITE CASES         (F8.3,2F1.0, . . .) PUPILS, YEAR, POOR, Y11,
                    Y12, . . . Y1K
```

```
*COMPUTE           YEAR = 1*COMPUTE              POOR = 2
*COMPUTE           PUPILS = NPOORAD1
WRITE CASES        (same as above)
*COMPUTE           YEAR = 2
*COMPUTE           POOR = 1
*COMPUTE           PUPILS = POORAD2
WRITE CASES        (F8.3,2F1.0, . . .) PUPILS, YEAR, POOR, Y21,
                   Y22, . . . Y2K
   o
   o
   o
*COMPUTE           YEAR = 3
*COMPUTE           POOR = 2
*COMPUTE           PUPILS = NPOORAD3
WRITE CASES        (F8.3, 2F1.0, . . .)PUPILS, YEAR, POOR, Y31,
                   Y32, . . . Y3K
FINISH
```

Again, this raw output file should be converted into an SPSS system file; this file should have a separate subfile for each year.

A comment will be given concerning reasons for the structure of the special ANOVA files. In the analyses of variance, statewide means are being computed for each ethnic or poverty group, and these means are being compared. To run these analyses we would need a file which contains a separate observation ("case") for each student in the state, indicating his or her ethnic group membership (poverty status) and associated per-pupil revenues, expenditure, etc. Such a file is impractical. However, we are assuming that each student in a given district has the same per-pupil revenues, expenditure, etc. (we must make this assumption, since we have no data for individual schools or classes within districts.) Therefore, the observation for each student within a district will be identical, except for ethnic group membership; observations for all students within a district who are in the same ethnic group will have identical observations. In the special ANOVA files, we have represented all students whose observations are identical with one observation; the variable PUPILS tells how many students are represented by each observation. In computing PUPILS, the actual numbers of students were divided by meanada1, meanada2, and meanada3 so that the degrees of freedom in the ANOVAs, which are computed from PUPILS, will sum to the number of districts, rather than the number of students. This is necessary, because we have only one independent observation for each district, rather than each student.

Research Question 1. To what extent are ethnic and income groups isolated by school district boundaries?

> Operational Question 1A: Are large numbers of minority or poor children concentrated in a few school districts?
>
> Operational Question 1B: To what extent are minority or poor children concentrated in districts where they constitute large proportions of the school district enrollments?

The analyses will be frequency distributions of the number and percent of students in the districts in each ethnic group and who are poor. A frequency distribution will be obtained for each of these variables, weighted by the number of students in the appropriate group for each year. The standard file will be used. Let PANGLO1, PBKACK1, PSPAN1 ... ... be the percentages of students in the various ethnic groups and PPOOR1...the percentage of students who are poor.

The following control cards may be used:

```
COMPUTE                 NANGLOS1 = 0 - ANGADA1
COMPUTE                 PANGLO1 = 0 - PANGLOS1
COMPUTE                 NBLACKS1 = 0 - BLAKADA1
COMPUTE                 PBLACK1 = 0 - PBLACK1
COMPUTE                 NSPANIS1 = 0 - SPANADA1
COMPUTE                 PSPAN1 = 0 - PSPAN1
COMPUTE                 NANGLO2 = 0 - ANGLADA2
   o
   o
   o
COMPUTE                 NSPANIS3 = 0 - SPANADA3
COMPUTE                 PSPAN3 = 0 - PSPAN3
*WEIGHT                 ANGLADA1
FREQUENCIES             GENERAL = NANGLOS1, PANGLOS1
OPTIONS                 6
STSTISTICS              ALL
*WEIGHT                 BLAKADA1
FREQUENCIES             GENERAL = NBLACKS1, PBLACK1
OPTIONS                 6
STATISTICS              ALL
*WEIGHT                 SPANADA1
FREQUENCIES             GENERAL = NSPANIS1, PSPAN1
OPTIONS                 6
STATISTICS              ALL
*WEIGHT                 ANGLADA2
FREQUENCIES             GENERAL = NANGLOS2, PANGLO2
OPTIONS                 6
STATISTICS              ALL
   o
   o
   o
*WEIGHT                 SPANADA3
FREQUENCIES             GENERAL = NANGLOS3, PSPAN3
OPTIONS                 6
STATISTICS              ALL
FINISH
```

The purpose of the series of COMPUTE statements which subtract the various numbers and percentages of pupils from zero is to cause the frequency distributions to be reversed. The result of this is that the cumulative percentages on the frequency distributions will be from the top down, <u>i.e.</u> giving the overall percentages of pupils in districts with numbers or percentages of pupils in the group greater than or equal to the current value, rather than less than or equal to, as in conventional SPSS frequency distributions.

Research Question 2: What disparities exist among the major ethnic and income groups in the various resource measure such as per pupil total current operating expenditures, local revenues, state general aid, state categorical aid, and federal aid?

> Operational Question 2A: What are the magnitudes and directions of differences among the various ethnic and income groups in statewide mean per pupil values of the above resource measures?
>
> Operational Question 2B: What are the ethnic/income differences in the magnitudes of the variations within each ethnic or income group of each of the above resource measures?

The analyses for OQ2A are 1-way analyses of variance (ANOVA).* The independent variables are ethnic group and poor/nonpoor, and the dependent variables are the school finance variables (per pupil revenues and expenditure, etc.) A separate ANOVA is to be run for each combination of an independent variable and a dependent variable for each year. The special ANOVA files are to be used. The following control cards may be used to run these analyses for ethnic group membership as the independent variable.

```
RUN NAME          MEAN DIFFERENCE IN SCHOOL FINANCE VARIABLES
GET FILE          ETHNIC
WEIGHT            PUPILS
BREAKDOWN         VARIABLES = Y1,Y2, . . .YK(LO,HI)ETHNIC(1,3)
                  YEAR(1,4)/ (lowest and highest values of YEAR)
                  CROSSBREAK=Y1 TO YK BY ETHNIC BY YEAR
RUN SUBFILES      EACH
ONEWAY            Y1, Y2, . . .YK BY ETHNIC (1,3)/(lowest and
                  highest values of ETHNIC) RANGES = SCHEFFE
                  (.10)/RANGES = SCHEFFE(.05)/
STATISTICS        ALL
FINISH
```

For poor/nonpoor as independent variable, the sequence of cards should be identical to those above except that POOR(1,2) should replace ETHNIC(1,3) on the ONEWAY card and the special poor ANOVA file should be used.

---

*"ANOVA" and "ANCOVA" are used throughout as acronyms for "analysis of variance" and "analysis of covariance," respectively. ANOVA is not to be confused with the SPSS subprogram by the same name.

The within-group variances needed for OQ2B will be produced by the ONEWAY and BREAKDOWN subprogram runs. Some comparisons will be done by hand.

> Operational Question 2C: What are the ethnic/income differences in the shapes of the distributions within each ethnic or income group of each of the above resource measures?

The output required is frequency distributions for each of the OQ2A dependent variables. These will be obtained for each year-ethnic group combination and each year-poor/nonpoor combination. For the distribution of each dependent variables (Y11, Y12, . . . Y1K, Y21, . . .) the value at each decile of each ethnic group (i.e., 10 percent of the total ethnic group enrollment) may be identified by examining the cumulative percentage column of the frequence distribution. The standard file should be used with the following control cards:

```
RUN NAME            WITHIN-GROUP FREQUENCE DISTRIBUTIONS
GET FILE            STANDARD
*WEIGHT             ANGLADA1
FREQUENCIES         GENERAL = Y11, Y12, . . . Y1K
OPTIONS             6
STATISTICS          ALL
*WEIGHT             BLAKADA1
FREQUENCIES         GENERAL = Y11, Y12, . . . Y1K
OPTIONS             6
STATISTICS          ALL
*WEIGHT             SPANADA1
FREQUENCIES         GENERAL = Y11, Y12, . . . Y1K
OPTIONS             6
STATISTICS          ALL
*WEIGHT             POORADA1
FREQUENCIES         GENERAL = Y11, Y12, . . . Y1K
OPTIONS             6
STATISTICS          ALL
```

```
*WEIGHT             NPOORAD1
FREQUENCIES         GENERAL = Y11, Y12, . . . Y1K
*WEIGHT             ANGLADA2
FREQUENCIES         GENERAL = Y12, Y22, . . . Y2K
OPTIONS             6
STATISTICS          ALL
*WEIGHT             BLADADA2
   o
   o
   o
*WEIGHT             SPANADA3
FREQUENCIES         GENERAL = Y31, Y32, . . . Y3K
OPTIONS             6
STATISTICS          ALL
*WEIGHT             POORADA3
FREQUENCIES         GENERAL = Y31, Y32, . . . Y3K
OPTIONS
STATISTICS          ALL
*WEIGHT             NPOORAD3
FREQUENCIES         GENERAL = Y31, Y32, . . . Y3K
OPTIONS
STATISTICS          ALL
FINISH
```

<u>Research Question 3: How are the differences in per pupil measures of the various educational resources related to the ethnic or income composition of school districts?</u>

> Operational Question 3A: How are each of the measures of educational resources related to percent Mexican American pupils enrolled in the district?
>
> Operational Question 3B: How are each of the measures of educational resources related to percent Black pupils enrolled in the district?
>
> Operational Question 3C: How are each of the measures of educational resources related to percent Anglo pupils enrolled in the district?
>
> Operational Question 3D: How are each of the measures of educational resources related to percent of pupils from families below poverty?

Bivariate correlation analysis will be used. Separate correlations will be computed for each year. The standard file will be used. For these OQs, predictors will be percentages of students in the school districts who belong to the various ethnic groups and the poor and nonpoor groups; dependent variables will be the school finance variables. For additional information and convenience, the control variables (percent urban, etc.) designated C11, C21, . . . C1L, C21, . . . C2L, C31, . . . C3L should also be included and correlations should be computed among all pairs of variables for a given year, regardless of whether variables are "predictors", "criteria", or "controls." Runs should be made both weighted by the total numbers of students (adjusted as below) and unweighted. The following control cards may be used:

```
RUN NAME              CORRELATIONS AMONG SCHOOL FINANCE VARIABLES
GET FILE              STANDARD
COMPUTE               ADA1 = ADA1/meanada1
COMPUTE               ADA2 = ADA2/meanada2
COMPUTE               ADA3 = ADA3/meanada3
*WEIGHT               ADA1
PEARSON CORR          PANGLO1, PBLACK1, PSPAN1, Y11, Y12,...C11...C1L
OPTIONS               5
PEARSON CORR          PANGLO2,PBLACK2,PSPAN2, Y21,Y22,...C21,C22...C2L
OPTIONS               5
*WEIGHT               ADA3
PEARSON CORR          PANGLO3, PBLACK3, PSPAN3, Y31, Y32, . . .
                      Y3K, C31, C32, . . . C3L
OPTIONS               5
PEARSON CORR          PANGLO1, PBLACK1, PSPAN1, Y11, Y12, . . .
                      Y1K, C11, C12, . . . C1L
OPTIONS               5
PEARSON CORR          PANGLO2, PBLACK2, PSPAN2, Y21, Y22, . . .
                      Y2K, C21, C22, . . . C2L
OPTIONS               5
PEARSON CORR          PANGLO3, PBLACK3, PSPAN3, Y31, Y33, . . .
                      Y3K, C31, C32, . . . C3L
OPTIONS               5
FINISH
```

Another set of analyses will be done in which the school districts will be categorized based on their percentages of students of various ethnic and poor/nonpoor groups. Mean values of the school finance variables for these various groups of districts will be computed and compared. The standard file should be used. In categorizing the districts based on, for example, percent of students who are of Spanish-background, either of two approaches suggested here may be used. First, cutting percentages may be established _a priori_ which are meaningful. For example it might be meaningful to consider any district with over fifty percent of its students of Spanish background to have a "heavy" concentration of Spanish-background students. The other recommended approach is to divide the districts into groups containing approximately equal numbers of students, i.e., into quartiles or quintiles based on percentage of Spanish-background students. The following control cards serve as an example:

```
RUN NAME          ANOVA - CATEGORIZED PERCENTAGES AND SCHOOL
                  FINANCE
GET FILE          STANDARD
RECODE            PANGLO1, PANGLO2, PANGLO3 (LOWEST THRU 25=1)
                  25 THRU 50=2) (50 THRU 75=3) (75 THRU HIGHEST=4)
RECODE            PBLACK1, PBLACK2, PBLACK3(LOWEST THRU 20=1)
                  (20 THRU 40=2)(40 THRU HIGHEST=3)(The number of
                  categories and cutting points for these cate-
                  gories must be determined by the investigator.)
RECODE            PSPAN1, PSPAN2, PSPAN3(LOWEST THRU 20=1)(20 THRU
                  40=2)(40 THRU 60=3)(60 THRU 80=4)(80 THRU
                  HIGHEST = 5)
RECODE            PPOOR1, PPOOR2, PPOOR3(LOWEST THRU 25=1)(25 THRU
                  75=2)(75 THRU HIGHEST=3)
COMPUTE           ADA1 = ADA1 / meanada1
COMPUTE           ADA2 = ADA2 / meanada2
COMPUTE           ADA3 = ADA3 / meanada3
*WEIGHT           ADA1
ONEWAY            Y11, Y12, . . . Y1K by PANGLO1(1,4)/RANGES=
                  SCHEFFE (0.5)
STATISTICS        ALL
*WEIGHT           ADA1
ONEWAY            Y11, Y12, . . . Y1K BY PBLACK(1,3)/ RANGES=
                  SCHEFFE(.05)
STATISTICS        ALL
*WEIGHT           ADA1
```

```
ONEWAY                  Y11, Y12, . . . Y1K BY PSPAN1(1,5)/RANGES=
                        SCHEFFE(.05)
STATISTICS              ALL
*WEIGHT                 ADA1
ONEWAY                  Y11, Y12, . . . Y1K BY PPOOR1(1,3)/RANGES=
                        SCHEFFE(.05)
STATISTICS              ALL
*WEIGHT                 ADA2
ONEWAY                  Y21, Y22, . . . Y2K BY PANGLO2(1,4)/RANGES=
                        SCHEFFE(.05)
STATISTICS              ALL
   o
   o
   o
*WEIGHT                 ADA3
ONEWAY                  Y31, Y32, . . . &3K BY PPOOR3(1,3)/RANGES=
                        SCHEFFE(.05)
STATISTICS              ALL
FINISH
```

Research Question 4: How much of the disparities among ethnic and income groups and among districts of different ethnic and income composition may be attributed to local tax effort, local property wealth and geographic locale?

> Operational Question 4A: What are the mean differences among ethnic (or income) groups in statewide school tax rate, equalized assessed valuation per pupil, and percent urban in the school district attendance area?

These analyses will be 1-way ANOVAs. Independent variables will be ethnic group membership and poor/nonpoor; dependent variables are the control variables (C11, C12, . . .) An ANOVA will be done for each single independent variable-dependent variable pair for each year. The special ANOVA files will be used. The control cards of OQ2A may be used with the dependent variables (Y11, Y12, . . .) replaced by those of this OQ.

> Operational Question 4B: What mean differences on each of the resource measures remain among the various ethnic and income groups after the effects of local equalized assessed valuation per pupil and percent rural considered singly, are removed?

These analyses will be ethnic group membership and poor/nonpoor, dependent variable will be school finance variables (Y1, Y2, . . .) and covariates will be the dependent variables used in OQ4A (C1, C2, . . .) These analyses will be run using the special ANOVA files. Notice that the first subscript, designating the year, of the Y's and C's have been dropped. The special ANOVA files do not contain separate variables for each year; rather, these files contain separate observations (cases) for each year. An analysis of covariance will be done for each combination of one, independent variable, one dependent variable, and one covariate for each year. The following control cards will serve as examples for the ethnic group analysis:

```
RUN NAME           ANALYSIS OF COVERIANCE BY GROUPS
GET FILE           ETHNIC
WEIGHT             NPUPILS
RUN SUBFILES       EACH
ANOVA              Y1,Y2,...Yk BY ETHNIC(1,3)WITH C1/  note that
                   Y1,Y2,...Yk BY ETHNIC(1,3)WITH C2/  no more than
                     .                                 five dependen
                     .                                 variables may
                     .                                 be specified
                   Y1,Y2,...Yk BY ETHNIC(1,3)WITH CL/  one control
STATISTICS         ALL                                 field.
FINISH
```

The analyses of covariance, as well as the analyses of variance described elsewhere, may be run using the REGRESSION subprogram instead of the ONEWAY or ANOVA subprograms. Chapter 21 of the SPSS manual describes how to use REGRESSION for this purpose.

> Operational Question 4C: What mean differences on each of the resource measures remain among the various ethnic and income groups after the effects of district wealth and percent urban, taken at once, have been removed?

These analyses are also 1-way analyses of covariance. The same variables are used here as were used for OQ4B. The special ANOVA files will again be used; the following control cards are offered as examples:

```
RUN NAME                    ANALYSIS OF COVARIANCE BY GROUPS, ALL COVARIATES
GET FILE                    ETHNIC
WEIGHT                      PUPILS
RUN SUBFILES                EACH
ANOVA                       Y1,Y2,...Yk BY ETHNIC(1,3)WITH C1,C2,...Cl
STATISTICS                  ALL
FINISH
```

Where poor/nonpoor is the independent variable, the special ANOVA poor/nonpoor file is used, and similar control cards may be used.

> <u>Operational Question 4D</u>: How are differences in local tax effort, property wealth per pupil and percent urban correlated with the ethnic or income composition or school districts?

Two approaches will be used for this OQ. The first is bivariate correlation analysis. Criteria are the control variables used above (C11, C12,...), and predictors will be percentages of students in the various ethnic groups for districts. These correlation will be produced by the control cards given for OQ3A - 3D.

The other approach was also used for OQ3A - 3D. In this approach, districts will be divided into groups based on their values for the control variables. Means for each of these groups of districts will be computed on the school finance variables and will be compared. ONEWAY control cards similar to those of OQ3A - 3D may be used. The control variables (C11, C12,...) will replace the ethnic group percentages in the RECODE and ONEWAY statements.

Operational Question 4E: To what extent is ethnic (or income) composition of school districts associated with each resource measure after controlling for the effects of district wealth and locale, taken separately and together?

Multiple regression analysis will be used. Predictors will be percentages of students in the various ethnic groups and who are poor, as well as the control variables (C11, C12, ...) Criteria will be the school finance variables. The standard file will be used; analyses will be run for each year and both weighted and unweighted. The following control cards are examples:

```
RUN NAME           REGRESSION PERCENTAGES AND COVARIANCES
GET FILE           STANDARD
COMPUTE            ADA1 = ADA1/meanada1
COMPUTE            ADA2 = ADA2/meanada2
COMPUTE            ADA3 = ADA3/meanada3
*WEIGHT            ADA1
REGRESSION         VARIABLES=PANGLO1, PBLACK1, PSPAN1, PPOOR1,
                   Y11, Y12, . . . Y1K, C11, . . C1L/
                   REGRESSION=Y11 WITH C11(8), PANGLO1(6)/
                   REGRESSION=Y11 WITH C11(8), PBLACK1(6)/
                     o
                     o
                     o

                   REGRESSION=Y1K WITH C1L(8),PPOOR1(6)/
                   REGRESSION=Y1K WITH C11, C12, . . . C1L,
                   PANGLO, . . . SPAN1/
                     o
                     o
                     o
STATISTICS         ALL
*WEIGHT            ADA2
REGRESSION         VARIABLES=PANGLO2, PBLACK2, PSPAN2, Y12, Y22,
                   . . . Y2K, C21, C22, . . . C2L/
                   REGRESSION=Y21 WITH C21(8), PANGLO2(6)/
*WEIGHT            ADA3
REGRESSION         VARIABLES=. . .
                     o
                     o
                     o
FINISH
```

The idea behind these regression analyses is that variance attributable to the various predictors is successively removed from the criterion. This allows us to assess the amount of variance due to one predictor after variance due to other predictors has already been removed (controlled for). For example, we might first remove from local revenue the variance attributed to local tax rate and then remove (i.e., assess) the variance attributable to percent Spanish-background students.

Because substantial numbers of districts have missing data for some variables (the census variables) while data is available for all districts on other variables, casewise, rather than pairwise, deletion for missing data is used in the REGRESSION runs. Therefore, it might be wise to use separate REGRESSION control cards for analyses which do and do not involve variables with much missing data.

Research Question 5: What changes in the various resource measures have occurred among the major ethnic and income groups in the state after enactment of the reform? Within each major ethnic and income group?

Operational Question 5A: Have mean differences among the various ethnic and income groups on each of the resource measures decreased after enactment of a new school finance law?

Operational Question 5B: Have the within-group variances on each of the resource measures decreased after enactment of a new school finance law?

Operational Question 5C: How much have between-group variances in resources decreased as a percent of the total variance after enactment of a new school finance law?

To a great extent, the answers to these OQ's may be determined from the results of the analyses of variance done for OQ2A and 2B. However, a two-way analysis of variance will shed greater light on these questions. For these two-way analyses, dependent variables will be the school finance variables. Independent variables will be ethnic group membership or poor/nonpoor, along with year. The special ANOVA files will be used; the following control card examples are offered:

```
RUN NAME          2-WAY ANOVA--GROUPS AND YEARS
GET FILE         .ETHNIC
WEIGHT            PUPILS
ANOVA             Y1,Y2,...Yk BY ETHNIC(1,3),YEAR(1,3)
STATISTICS        ALL
FINISH
```

When poor/nonpoor is an independent variable, the special ANOVA poor/nonpoor file is used.

Research Question 6: How have the correlations between the various educational resources and ethnic or income composition of school districts changed after enactment of the reform law?

> Operational Question 6A: How have the relationships between the various educational resource measures and percent Mexican American pupils enrolled in the district changed after the reform law?
>
> Operational Question 6B: How have the relationships between the various educational resource measures and percent Black pupils enrolled in the district changed after the reform law?
>
> Operational Question 6C: How have the relationships between the various educational resource measures and percent Anglo pupils enrolled in the district changed after the reform law?
>
> Operational Question 6D: How have the relationships between the various educational resource measures and percent of pupils from families below poverty changed after the reform law?

Results from OQ3A - 3D are used here, and no additional runs are required. The analyses here are comparisons of results from OQ3A - 3D for the various years.

Research Question 7: How much of the decrease (or increase) in resource disparities among ethnic or income groups and among districts of different ethnic (or income) group proportions after passage of the reform law is due to intervening factors such as local tax effort, property wealth, and geographic locale?

Operational Question 7A: Have mean resource differences among the various ethnic or income groups decreased after the reform law, when effects of district wealth and percent urban are taken into consideration?

Operational Question 7B: What is the relationship between the intervening variables and the resource measures after the law changes as compared to before the law was enacted?

Operational Question 7C: To what extent has the association between ethnic (or income) composition and each resource measure changed as a result of the new school finance law after controlling for the effects of district wealth, and locale?

Results of the previous analyses of covariance and analyses of variance will contribute much to answering these questions. Two way analyses of covariance may contribute additional information concerning this question. These two-way analyses are optional. They may be used if more than two years of data are available. They can be run using the special ANOVA files and the same independent and dependent variables used for OQ5A. The covariates will be the control variables (C1, C2, . . .) which might be market value of taxable property per pupil and percent urban.

The following control cards are examples:

```
RUN NAME              TWO-WAY ANOVA--GROUPS AND YEARS
GET FILE              ETHNIC
WEIGHT                PUPILS
ANOVA                 Y1,Y2,...Yk BY ETHNIC(1,3)YEAR(1,3)WITH C1/
                      Y1,Y2,...Yk BY ETHNIC(1,3)YEAR(1,3)WITH C2/
                        o
                        o
                        o
                      Y1,Y2,...YK BY ETHNIC(1,3)YEAR(1,3)WITH C1,
                      C2,...CL/
STATISTICS            ALL
FINISH
```

General Comments

The reader will note that some earlier analyses are subsumed under later analyses. For example, basic results of some 1-way ANOVAs would be obtained from later 1-way ANCOVAs. However, earlier analyses use different SPSS subprograms which give more information than later ones, but which cannot perform the more complex analyses. Also, analyses from several of the OQ's could be done in the same computer run. However, these analyses probably should be done in separate runs for simplicity.

The lists of SPSS run cards are examples only. All will have to be modified by insertion of correct variable names, upper and lower value limits, and so on. The user should study each set of cards and the relevant sections of the SPSS manual until s/he understands what is being done in each run before actually making the runs. Also, the user should insure that correct JCL cards are included for the particular computer being used. Finally, some output from the runs - sums of squares, in particular - may exceed the output format limits of SPSS and will be output as ***'s. This problem can frequently be solved by dividing the dependent variables by a large number, say, the mean of the variables. Also, sometimes the missing output values may be computed from values that are output correctly.

APPENDIX D

LISTING OF DATA FILES

332

CALIFORNIA FILE

A. Physical Characteristics

1. Tape ID: (VOL=SER=) SCHOOL
2. Number of tracks: 9
3. Density: 1600 bpi
4. DSN: CALIFORN.FIN
5. LABEL: (3,SL)
6. Record type: fixed blocked
7. Record length: 952
8. Blocksize: 4760
9. Number of records: 4192
10. Data representation: EBCDIC

B. General Description

1. The file contains data for school years 1972-73 through 1975-76. Each record contains data for one district during one year. Data from the 1970 census (VAR4xx - See Sec. C.) are repeated in all years. The records are grouped by year from earliest to latest. Each year group contains 1048 records (if VAR 003 = 1, Elementary district; if VAR 003 = 3, secondary district; if VAR 003 = 4, unified district).
2. The variables are in the order listed below. All variables are in FORTRAN format (E14.8). There are no blanks between fields.
3. Data Source: File prepated by Paul Goldfinger, Berkeley, California.

C. Layout: List of Variables

```
VARIABLE  VARIABLE LABEL                                        MISSING PRT
   NAME                                                          VALUES FMT


YEAR                                                               -999.   0

ETHNIC                                                             -999.   0
                              1. INDIANS
                              2. BLACKS
                              3. ORIENTALS
                              4. CHICANOS
                              5. ANGLOS

WGHT                                                            -999.00   2

VAR001    COUNTY CODE                                           -999.00   2

VAR002    DISTRICT CODE                                         -999.00   2

VAR003    DISTRICT LEVEL                                        -999.00   2

VAR004    ACTUAL ASSESSED VALUE PER PUPIL K-12                     -999.   0

VAR005    MODIFIED ASSESSED VALUE PER PUPIL K-12                   -999.   0

VAR006    LOCAL TAX RATE                                        -999.00   2

VAR007    K TO 12 ADA                                           -999.00   2

VAR008    DEFINED ADULT ADA                                     -999.00   2

VAR009    FEDERAL NONCATAGORICAL REVENUE                        -999.00   2

VAR010    FEDERAL CATAGORICAL REVENUE                           -999.00   2
```

VARIABLE NAME	VARIABLE LABEL	MISSING VALUES	PRT FMT
VAR011	FEDERAL THRU STATE REVENUE	-999.00	2
VAR012	STATE REV BASIC AND EQUAL AND STRS	-999.00	2
VAR013	STATE REV SPECIAL ED	-999.00	2
VAR014	TRANSPORTATION	-999.00	2
VAR015	EDY STATE REVENUE	-999.00	2
VAR016	STATE REVENUE ECE	-999.00	2
VAR017	STATE REVENUE MILLER-UNRUH	-999.00	2
VAR018	STATE REVENUE TAX RELIEF SUBSIDY	-999.00	2
VAR019	STATE REV ALL OTHER	-999.00	
VAR020	COUNTY REV	-999.00	2
VAR021	LOCAL REVENUE AREA-WIDE AID	-999.00	2
VAR022	LOCAL REVENUE NOT AREA-WIDE	-999.00	2
VAR023	TOTAL GENERAL FUND EXP	-999.00	2
VAR024	TITLE 1 ENTITLEMENT	-999.00	2
VAR025	BIL REV STATE	-999.00	2
VAR026	BIL REV FED	-999.00	2
VAR027	AFDC COUNTY	-999.00	2
VAR028	% AMER IND	-999.00	2
VAR029	% BLACK	-999.00	2
VAR030	% ASIAN AMER	-999.00	2
VAR031	% SPAN SUR	-999.00	2

```
VARIABLE  VARIABLE LABEL                                  MISSING PRT
    NAME                                                   VALUES FMT

VAR032    % ANGLO                                         -999.00   2

VAR033    % WEALTH GREATER 12,000                         -999.00   2

VAR034    % WEALTH GREATER 15,000                         -999.00   2

VAR035    % POV FAMILIES                                  -999.00   2

VAR036    % POV PERSONS                                   -999.00   2

VAR037    % POV SCH AGE CHILD                             -999.00   2

VAR038    MIDI COX URBAN-RURAL INDEX                      -999.00   2

VAR039    N INDIANS IN ADA                                -999.00   2

VAR040    N BLACKS IN ADA                                 -999.00   2

VAR041    N ASIAN AMERICANS IN ADA                        -999.00   2

VAR042    N SPANISH SURAME IN ADA                         -999.00   2

VAR043    N ANGLOS IN ADA                                 -999.00   2

VAR044    N OF POOR STUDENTS IN ADA                       -999.00   2

VAR401    COUNTY CODE                                     -999.00   2

VAR402    DIST CODE                                       -999.00   2

VAR403    DISTRICT LEVEL                                  -999.00   2

VAR404    MEAN FAMILY INCOME                              -999.00   2

VAR405    URBAN POPULATION                                  -999.     0

VAR406    RURAL POPULATION                                -999.00   2

VAR407    PERCENT URBAN POPULATION                        -999.00   2

VAR408    URBAN-RURAL INDEX                               -999.00   2
```

VARIABLE NAME	VARIABLE LABEL	MISSING VALUES	PRT FMT
VAR409	PCT FAMILIES W INCOME BELOW $1000	-999.00	2
VAR410	PCT FAMILIES W INCOME $1000 - 1999	-999.00	2
VAR411	PCT FAMILIES W INCOME $2000 - 2999	-999.00	2
VAR412	PCT FAMILIES W INCOME $3000 - 3999	-999.00	2
VAR413	PCT FAMILIES W INCOME $4000 - 4999	-999.00	2
VAR414	PCT FAMILIES W INCOME $5000 - 5999	-999.00	2
VAR415	PCT FAMILIES W INCOME $6000 - 6999	-999.00	2
VAR416	PCT FAMILIES W INCOME $7000 - 7999	-999.00	2
VAR417	PCT FAMILIES W INCOME $8000 - 8999	-999.00	2
VAR418	PCT FAMILIES W INCOME $9000 - 9999	-999.00	2
VAR419	PCT FAMILIES W INCOME $10000 - 11999	-999.00	2
VAR420	PCT FAMILIES W INCOME $12000 - 14999	-999.00	2
VAR421	PCT FAMILIES W INCOME $15000 - 24999	-999.00	2
VAR422	PCT FAMILIES W INCOME $25000 - 49999	-999.00	2
VAR423	PCT FAMILIES W INCOME $50000 AND OVER	-999.00	2

COLORADO FILE

A. Physical Characteristics

1. Tape ID: (VOL=SER=) SCHOOL
2. Number of tracks: 9
3. Density: 1600 bpi
4. DSN: COLORADO.FIN
5. LABEL: (2,SL)
6. Record type: fixed blocked
7. Record length: 806
8. Blocksize: 4030
9. Number of records: 181
10. Data representation: EBCDIC

B. General Description

1. The file contains data for school years 1973-74 through 1975-76. Each record contains all data for a district for all years, as well as from the 1970 census.
2. The variables are in the order listed below. All numeric variables are in FORTRAN format (E14.8), while all alphanumeric variables (Print format 'A') are in FORTRAN format (A4). There are no blanks between fields.
3. Data Source: Colorado School Finance Reform Project of the Chicano Education Project, Lakewood, Colorado. Renee M. Montoya, Director. File propared by Gale Whiteneck, Data Consultant.

C. Layout: List of Variables

VARIABLE NAME	VARIABLE LABEL	MISSING VALUES	PRT FMT
NAME1		NONE	A
NAME2		NONE	A
NAME3		NONE	A
NAME4		NONE	A
NAME5		NONE	A
EVAL75	- EQUALIZED VALUE PER ADM 1975	NONE	0
ETAX	- TOTAL EQUALIZED TAX MILLAGE 1975	NONE	0
ADAE3	- ADA ENTITLEMENT 1973	NONE	0
ADAE4	- ADA ENTITLEMENT 1974	NONE	0
ADAE	- ADA ENTITLEMENT 1975	NONE	0
VAL73	- ASSESSED VALUATION 1973	NONE	0
EVAL73	- EQUALIZED VALUE PER PUPIL 1973	NONE	0
RATIO73	- ASSESSMENT-SALES RATION 1973	NONE	0
TSALPUP3	TEACHER SALARY PER PUPIL 1973	NONE	0
TOTEXP3	TOTAL EXPENDITURE PER PUPIL-LESS CAP 197	NONE	0
INPUPEX3	TOT INSTRUC EXPEND PER PUPIL 1973	NONE	0
HLEXPUP3	TOTAL HLT SERVICE EXPEND PER PUPIL 1973	NONE	0
TREXPUP3	TOT TRANSPORTATION EXPEND PER PUPIL 1973	NONE	0
MAIEXPU3	TOT MAINTENANCE EXPEND PER PUPIL 1973	NONE	0
LCREVPU3	TOTAL LOCAL REVENUE PER PUPIL 1973	NONE	0
EQUAPUP3	EQUALIZATION PER PUPIL 1973	NONE	0
SMREVPU3	SMALL ATTENDANCE REVENUE PER PUPIL L 73	NONE	0
VEDREPU3	STATE VOC ED REVENU PER PUPIL 1973	NONE	0
HNDREPU3	STATE HANDICAPPED REVENUE PER PUPIL 1973	NONE	0
TRREVPU3	STATE TRANSPORTATION REVENU PER PUP 1973	NONE	0
STREVPU3	TOTAL STATE REVENUE PER PUPIL 1973	NONE	0
PELSPED3	PERCENT ELEM SPED STUDENTS OF TOT ELE 73	NONE	0
PHSPED3	PERCENT SEC SPED STUDENTS OF TOT SEC 73	NONE	0

VARIABLE NAME	VARIABLE LABEL	MISSING VALUES	PRT FMT
PUGELEM3	PERCENT UNGRADED ELEM STU OF TOT ELEM 73	NONE	0
PUGHSCH3	PERCENT UNGRADED SEC STU OF TOT SEC 73	NONE	0
EVALPUP3	EQUALIZED ASSESSED VALUATION PER PUP 73	NONE	0
LOCSTAT3	SUM OF LOCAL AND STATE REVENU P PUP 73	NONE	0
FEDREPU3	FEDERAL REVENUE PER PUPIL 1973	NONE	0
LCSTFED3	SUM OF LOCAL,STATE,FEDERAL REV P PUP 73	NONE	0
TSALPUP4	TEACHER SALARY PER PUPIL 1974	NONE	0
TOTEXP4	TOTAL EXPENDITURE PER PUPIL-LESS CAP 197	NONE	0
INPUPEX4	TOT INSTRUC EXPEND PER PUPIL 1974	NONE	0
HLEXPUP4	TOTAL HLT SERVICE EXPEND PER PUPIL 1974	NONE	0
TREXPUP4	TOT TRANSPORTATION EXPEND PER PUPIL 1974	NONE	0
MAIEXPU4	TOT MAINTENANCE EXPEND PER PUPIL 1974	NONE	0
LCREVPU4	TOTAL LOCAL REVENUE PER PUPIL 1974	NONE	0
EQUAPUP4	EQUALIZATION PER PUPIL 1974	NONE	0
SMREVPU4	SMALL ATTENDANCE REVENUE PER PUPIL L 74	NONE	0
VEDREPU4	STATE VOC ED REVENU PER PUPIL 1974	NONE	0
HNDREPU4	STATE HANDICAPPED REVENUE PER PUPIL 1974	NONE	0
TRREVPU4	STATE TRANSPORTATION REVENU PER PUP 1974	NONE	0
STREVPU4	TOTAL STATE REVENUE PER PUPIL 1974	NONE	0
PCTIND4	PERCENT INDIANS OF TOTAL 1974	NONE	0
PCTASIN4	PERCENT ASIAN OF TOTAL 1974	NONE	0
PCTBLK4	PERCENT BLACK OF TOTAL 1974	NONE	0
PCTSPAN4	PERCENT SPANISH OF TOTAL 1974	NONE	0
PCTANGL4	PERCENT ANGLO OF TOTAL 1974	NONE	0
PELSPED4	PERCENT ELEM SPED STUDENTS OF TOT ELE 74	NONE	0

```
VARIABLE  VARIABLE LABEL                                    MISSING PRT
    NAME                                                     VALUES FMT

PHSPED4   PERCENT SEC SPED STUDENTS OF TOT SEC 74             NONE   0

PUGELEM4  PERCENT UNGRADED ELEM STU OF TOT ELEM 74            NONE   0

PUGHSCH4  PERCENT UNGRADED SEC STU OF TOT SEC 74              NONE   0

EVAL74    - EQUALIZED VALUE PER PUPIL 1974                    NONE   0

EVALPUP4  EQUALIZED ASSESSED VALUATION PER PUP 74             NONE   0

LOCSTAT4  SUM OF LOCAL AND STATE REVENU P PUP 74              NONE   0

FEDREPU4  FEDERAL REVENUE PER PUPIL 1974                      NONE   0

LOSTFED4  SUM OF LOCAL,STATE,FEDERAL REV P PUP 74             NONE   0

TSALPUP5  TEACHER SALARY PER PUPIL 1975                       NONE   0

TOTEXP5   TOTAL EXPENDITURE PER PUPIL-LESS CAP 197            NONE   0

INPUPEX5  TOT INSTRUC EXPEND PER PUPIL 1975                   NONE   0

HLEXPUP5  TOTAL HLT SERVICE EXPEND PER PUPIL 1975             NONE   0

TREXPUP5  TOT TRANSPORTATION EXPEND PER PUPIL 1975            NONE   0

MAIEXPU5  TOT MAINTENANCE EXPEND PER PUPIL 1975               NONE   0

LCREVPU5  TOTAL LOCAL REVENUE PER PUPIL 1975                  NONE   0

EQUAPUP5  EQUALIZATION PER PUPIL 1975                         NONE   0

SMREVPU5  SMALL ATTENDANCE REVENUE PER PUPIL L 75             NONE   0

VEDREPU5  STATE VOC ED REVENU PER PUPIL 1975                  NONE   0

HNDREPU5  STATE HANDICAPPED REVENUE PER PUPIL 1975            NONE   0

TRREVPU5  STATE TRANSPORTATION REVENU PER PUP 1975            NONE   0

STREVPU5  TOTAL STATE REVENUE PER PUPIL 1975                  NONE   0

LOCALE70  LOCALE--URBAN SMSA,SUBURBAN SMSA,RURA 70            NONE   0

PCTPOV5   PERCENT POVERTY KIDS                                NONE   0

PCTADC5   PERCENT ADC KIDS                                    NONE   0

PCOMPI5   PERCENT AVERAGE POVERTY AND ADC KIDS 75             NONE   0
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VARIABLE  VARIABLE LABEL                                 MISSING PRT
  NAME                                                    VALUES FMT

PCTIND5   PERCENT INDIANS OF TOTAL 1975                    NONE   0

PCTASIN5  PERCENT ASIAN OF TOTAL 1975                      NONE   0

PCTBLK5   PERCENT BLACK OF TOTAL 1975                      NONE   0

PCTSPAN5  PERCENT SPANISH OF TOTAL 1975                    NONE   0

PCTANGL5  PERCENT ANGLO OF TOTAL 1975                      NONE   0

PELSPED5  PERCENT ELEM SPED STUDENTS OF TOT ELE 75         NONE   0

PHSPED5   PERCENT SEC SPED STUDENTS OF TOT SEC 75          NONE   0

PUGELEM5  PERCENT UNGRADED ELEM STU OF TOT ELEM 75         NONE   0

PUGHSCH5  PERCENT UNGRADED SEC STU OF TOT SEC 75           NONE   0

EVALPUP5  EQUALIZED ASSESSED VALUATION PER PUP 75          NONE   0

LOCSTAT5  SUM OF LOCAL AND STATE REVENU P PUP 75           NONE   0

FEDREPU5  FEDERAL REVENUE PER PUPIL 1975                   NONE   0

LOSTFED5  SUM OF LOCAL,STATE,FEDERAL REV P PUP 75          NONE   0

ETAX73    - EQUALIZED TAX RATE 73                          NONE   0

ETAX74    - EQUALIZED TAX RATE 1974                        NONE   0

PCTIND3   PERCENT INDIANS OF TOTAL 1973                    NONE   0

PCTASIN3  PERCENT ASIAN OF TOTAL 1973                      NONE   0

PCTBLK3   PERCENT BLACK OF TOTAL 1973                      NONE   0

PCTSPAN3  PERCENT SPANISH OF TOTAL 1973                    NONE   0

PCTANGL3  PERCENT ANGLO OF TOTAL 1973                      NONE   0

MILL73    - UNEQUALIZED MILLAGE 1973                       NONE   0

MILL75    - UNEQUALIZED MILLAGE 1975                       NONE   0

FAMINC    - MEAN FAMILY INCOME 1970                          0.   0

URBAN     - N PEOPLE IN URBAN AREAS 1970                     0.   0

RURALN    - N PEOPLE IN URURAL NONFARM AREAS 1970            0.   0

RURALF    - N PEOPLE IN RURAL FARM AREAS 1970                0.   0
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FLORIDA FILE

A. Physical Characteristics

1. Tape ID: (VOL=SER=) SCHOOL
2. Number of tracks: 9
3. Density: 1600 bpi
4. DSN: FLORIDA.FIN
5. LABEL: (6,SL)
6. Record type: fixed blocked
7. Record length: 80
8. Blocksize: 1600
9. Number of records: 1943
10. Data representation: EBCDIC

B. General Description

1. Data for all years in a district are contained on 29, 80-byte card-image records. The file contains no missing values. Data formats, sources, and variable descriptions are in Part C., below.
2. Data source: Published reports of the Florida Department of Education.

C. Layout: List of Variables

Variable	Rec.	Columns	Source	Variable Label
NUMBER1	1	1- 2		DISTRICT NUMBER IDENTIFICATION
CARD1	1	3- 4		CARD NUMBER
NAME1	1	5- 9(A)		DISTRICT NAME
NAME2	1	10-13(A)		DISTRICT NAME
NAME3	1	14-17(A)		DISTRICT NAME
LOCREV72	1	18-26	PUPIL DATA*	LOCAL REVENUE K-12, 1972
STAREV72	1	27-35	PUPIL DATA	STATE REVENUE K-12, 1972
FEDREV72	1	36-43	PUPIL DATA	FEDERAL REVENUE K-12, 1972
FDSREV72	1	44-51	PUPIL DATA	FEDERAL THROUGH STATE REVENUE K-12, 1972
TOTREV72	1	52-61	PUPIL DATA	TOTAL REVENUE K-12, 1972
NONREV72	1	62-70	PUPIL DATA	NONREVENUE RECEIPTS K-12. 1972
TOTINC72	1	71-80	PUPIL DATA	TOTAL REVENUES & RECEIPTS K-12. 1972
NUMBER2	2	1- 2		
CARD2	2	3- 4		
ADMEXP72	2	18-24	PUPIL DATA	ADMINISTRATION EXPENDITURES, 1972
INSEXP72	2	25-34	PUPIL DATA	INSTRUCTIONAL EXPENDITURES, 1972
OPREXP72	2	35-43	PUPIL DATA	OPERATING EXPENDITURES. 1972
MANEXP72	2	44-52	PUPIL DATA	MAINTENANCE EXPENDITURES. 1972
AUXEXP72	2	53-61	PUPIL DATA	AUXILIARY SERVICES EXPENDITURES. 1972
FIXEXP72	2	62-70	PUPIL DATA	FIXED EXPENDITURES, 1972
TCREXP72	2	71-80	PUPIL DATA	TOTAL CURRENT EXPEND - DAY SCHOOLS, 1972
NUMBER3	3	1- 2		
CARD3	3	3- 4		
NPGEXP72	3	18-25	PUPIL DATA	NONPROGRAM SCHOOLS EXPENDITURES, 1972
TOTEXP72	3	26-35	PUPIL DATA	TOTAL CURRENT EXPEND - ALL SCHOOLS. 1972
CAPOUT72	3	36-44	PUPIL DATA	CAPITAL OUTLAY, 1972
DEBTSR72	3	45-53	PUPIL DATA	DEBT SERVICE, 1972
TOTALE72	3	54-63	PUPIL DATA	TOTAL EXPENDITURES ALL FUNDS. 1972
LOCTAX72	3	64-72	PUPIL DATA	LOCAL TAX REVENUE. 1972
MILLAG72	3	73-80(4)	PUPIL DATA	TOTAL MILLAGE, 1972
NUMBER4	4	1- 2		
CARD4	4	3- 4		
ASRATE72	4	17-21		ASSESSMENT RATIO. 1972
ASVALU72	4	22-33		NONEXEMPT ASSESSED VALUE. 1972
NUMBER5	5	1- 2		
CARD5	5	3- 4		
ADA72	5	18-24	PROFILES*	AVERAGE DAILY ATTENDANCE K-12. 1972
INDIAN72	5	25-28	PROFILES	NUMBER OF INDIAN STUDENTS, 1972
BLACK72	5	29-34	PROFILES	NUMBER OF BLACK STUDENTS. 1972
ASIAN72	5	35-38	PROFILES	NUMBER OF ORIENTAL STUDENTS. 1972
SPANIS72	5	39-44	PROFILES	NUMBER OF SPAN-BACKGROUND STUDENTS. 1972
ANGLO72	5	45-51	PROFILES	NUMBER OF ANGLO STUDENTS. 1972
MINOR72	5	52-58	PROFILES	NUMBER OF MINORITY STUDENTS. 1972
TOTAL72	5	59-65	PROFILES	TOTAL NUMBER OF STUDENTS K-12, 1972
NUMBER6	6	1- 2		
CARD6	6	3- 4		
LOCREV73	6	18-26	PUPIL DATA	LOCAL REVENUE K-12. 1973
STAREV73	6	27-35	PUPIL DATA	STATE REVENUE K-12. 1973
FDSREV73	6	44-51	PUPIL DATA	FEDERAL THROUGH STATE REVENUE K-12, 1973
FEDREV73	6	36-43	PUPIL DATA	FEDERAL REVENUE K-12. 1973
TOTREV73	6	52-61	PUPIL DATA	TOTAL REVENUE K-12, 1973
NONREV73	6	62-70	PUPIL DATA	NONREVENUE RECEIPTS K-12. 1973
NUMBER7	7	1- 2		
CARD7	7	3- 4		
ADMEXP73	7	18-24	PUPIL DATA	ADMINISTRATION EXPENDITURES. 1973
INSEXP73	7	25-34	PUPIL DATA	INSTRUCTIONAL EXPENDITURES. 1973
OPREXP73	7	35-43	PUPIL DATA	OPERATING EXPENDITURES. 1973
MANEXP73	7	44-52	PUPIL DATA	MAINTENANCE EXPENDITURES. 1973
AUXEXP73	7	53-61	PUPIL DATA	AUXILIARY SERVICES EXPENDITURES. 1973
FIXEXP73	7	62-70	PUPIL DATA	FIXED EXPENDITURES. 1973

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TOTALCT4   14   59-66        PUPIL DATA     TOTAL STATE PAY FROM STA[illegible]
NUMBER15   15    1- 2
CARD15     15    3- 4
ADA74      15   19-24        PROFILES       AVERAGE DAILY ATTENDANCE K-12, 1974
INDIAN74   15   25-28        PROFILES       NUMBER OF INDIAN STUDENTS, 1974
BLACK74    15   29-34        PROFILES       NUMBER OF BLACK STUDENTS, 1974
ASIAN74    15   35-38        PROFILES       NUMBER OF ORIENTAL STUDENTS, 1974
SPANIS74   15   39-44        PROFILES       NUMBER OF SPAN-BACKGROUND STUDENTS, 19
ANGLO74    15   45-51        PROFILES       NUMBER OF ANGLO STUDENTS, 1974
MINOR74    15   52-58        PROFILES       NUMBER OF MINORITY STUDENTS, 1974
TOTAL74    15   59-65        PROFILES       TOTAL NUMBER OF STUDENTS K-12, 1974
STAFF74    15   66-71        PROFILES       TOTAL FULL-TIME STAFF, 1974
NUMBER16   16    1- 2
CARD16     16    3- 4
LOCREV75   16   18-26        PROFILES       LOCAL REVENUE K-12, 1975
STAREV75   16   27-35        PROFILES       STATE REVENUE K-12, 1975
FEDREV75   16   36-43        PROFILES       FEDERAL REVENUE K-12, 1975
FDSREV75   16   44-51        PROFILES       FEDERAL THROUGH STATE REVENUE K-12, 1
TOTREV75   16   52-61        PROFILES       TOTAL REVENUE K-12, 1975
NONREV75   16   62-70        PROFILES       NONREVENUE RECEIPTS K-12, 1975
NUMBER17   17    1- 2
CARD17     17    3- 4
INSEXP75   17   25-34        PROFILES       INSTR EXPEND (INSTR + SUPPORT), 1975
OPREXP75   17   35-43        PROFILES       OPERATING EXPENDITURES, 1975
MANEXP75   17   44-52        PROFILES       MAINTENANCE EXPENDITURES, 1975
TCREXP75   17   71-80        PROFILES       TOTAL CURRENT EXPEND - DAY SCHOOLS, 1
NUMBER18   18    1- 2
CARD18     18    3- 4
CAPOUT75   18   36-44        PUPIL DATA     CAPITAL OUTLAY, 1975
DEBTSR75   18   45-53        PUPIL DATA     DEBT SERVICE, 1975
LOCTAX75   18   64-72        PUPIL DATA     LOCAL TAX REVENUE, 1975
MILLAG75   18   73-80(4)     PUPIL DATA     TOTAL MILLAGE, 1975
NUMBER19   19    1- 2
CARD19     19    3- 4
ASRATE75   19   18-22                       ASSESSMENT RATIO, 1975
ASVALU75   19   23-33                       NONEXEMPT ASSESSED VALUE, 1975
LCREFF75   19   34-43        PUPIL DATA     LOCAL REQUIRED EFFORT, 1975
NUMBER20   20    1- 2
CARD20     20    3- 4
ADA75      20   19-24        PROFILES       AVERAGE DAILY ATTENDANCE K-12, 1975
INDIAN75   20   25-28        PROFILES       NUMBER OF INDIAN STUDENTS, 1975
BLACK75    20   29-34        PROFILES       NUMBER OF BLACK STUDENTS, 1975
ASIAN75    20   35-38        PROFILES       NUMBER OF ORIENTAL STUDENTS, 1975
SPANIS75   20   39-44        PROFILES       NUMBER OF SPAN-BACKGROUND STUDENTS, 1
ANGLO75    20   45-51        PROFILES       NUMBER OF ANGLO STUDENTS, 1975
MINOR75    20   52-58        PROFILES       NUMBER OF MINORITY STUDENTS, 1975
TOTAL75    20   59-65        PROFILES       TOTAL NUMBER OF STUDENTS K-12, 1975
STAFF75    20   66-71        PROFILES       TOTAL FULL-TIME STAFF, 1975
NUMBER21   21    1- 2
CARD21     21    3- 4
EMRFTE73   21   19-21        PUPIL DATA     FTE EDUCABLE MENTALLY RETARDED, 1973
TMRFTE73   21   22-25        PUPIL DATA     FTE TRAINABLE MENTALLY RETARDED, 1973
PHCFTE73   21   26-29        PUPIL DATA     FTE PHYSICALLY HANDICAPPED, 1973
POTFTE73   21   30-32        PUPIL DATA     FTE PHYSICAL & OCCUPATION THERAPY, 19
STIFTE73   21   33-36        PUPIL DATA     FTE SPEECH THERAPY I, 1973
DEAFTE73   21   37-40        PUPIL DATA     FTE DEAF, 1973
VHIFTE73   21   41-43        PUPIL DATA     FTE VISUALLY HANDICAPPED I, 1973
VHCFTE73   21   44-46        PUPIL DATA     FTE VISUALLY HANDICAPPED, 1973
EDIFTE73   21   47-50        PUPIL DATA     FTE EMOTIONALLY DISTURBED I, 1973
EMDFTE73   21   51-54        PUPIL DATA     FTE EMOTIONALLY DISTURBED, 1973
SMAFTE73   21   55-58        PUPIL DATA     FTE SOCIALLY MALADJUSTED, 1973
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LIFTE73   21  59-63     PUPIL DATA    FTE SPECIFIC LEARNING DISABILITY I, 1973
DFTE73    21  64-67     PUPIL DATA    FTE SPECIFIC LEARNING DISABILITY. 1973
FIFTE73   21  68-71     PUPIL DATA    FTE GIFTED I. 1973
HIFTE73   21  72-74     PUPIL DATA    HOSPITAL & HOMEBOUND I, 1973
XEFTE73   21  75-79     PUPIL DATA    EXCEPTIONAL EDUCATION TOTAL FTE, 1973
UMBER22   22   1- 2
ARD22     22   3- 4
E1FTE73   22  18-21     PUPIL DATA    FTE VOCATIONAL EDUCATION I, 1973
E2FTE73   22  22-26     PUPIL DATA    FTE VOCATIONAL EDUCATION II, 1973
E3FTE73   22  27-31     PUPIL DATA    FTE VOCATIONAL EDUCATION III, 1973
E4FTE73   22  32-36     PUPIL DATA    FTE VOCATIONAL EDUCATION IV, 1973
E5FTE73   22  37-41     PUPIL DATA    FTE VOCATIONAL EDUCATION V, 1973
E6FTE73   22  42-45     PUPIL DATA    FTE VOCATIONAL EDUCATION VI, 1973
ETFTE73   22  46-51     PUPIL DATA    VOCATIONAL EDUCATION TOTAL FTE, 1973
BEFTE73   22  52-56     PUPIL DATA    FTE ADULT BASIC ED & ADULT HS, 1973
CSFTE73   22  57-61     PUPIL DATA    FTE ADULT COMMUNITY SERVICE. 1973
ETFTE73   22  62-66     PUPIL DATA    ADULT EDUCATION TOTAL FTE, 1973
23FTE73   22  67-72     PUPIL DATA    FTE KINDERGARTEN & GRADES 1-3, 1973
41FTE73   22  73-79     PUPIL DATA    FTE GRADES 4-10, 1973
UMBER23   23   1- 2
ARD23     23   3- 4
12FTE73   23  18-22     PUPIL DATA    FTE GRADES 11 & 12. 1973
ETFTE73   23  23-29     PUPIL DATA    BASIC EDUCATION TOTAL FTE, 1973
TFTE73    23  30-37     PUPIL DATA    GRAND TOTAL FTE, 1973
UMBER24   24   1- 2
ARD24     24   3- 4
MRFTE74   24  18-21     PUPIL DATA    FTE EDUCABLE MENTALLY RETARDED. 1974
MRFTE74   24  22-25     PUPIL DATA    FTE TRAINABLE MENTALLY RETARDED. 1974
HCFTE74   24  26-29     PUPIL DATA    FTE PHYSICALLY HANDICAPPED, 1974
OTFTE74   24  30-32     PUPIL DATA    FTE PHYSICAL & OCCUPATION THERAPY, 1974
T1FTE74   24  33-36     PUPIL DATA    FTE SPEECH THERAPY I. 1974
AFTE74    24  37-40     PUPIL DATA    FTE DEAF, 1974
H1FTE74   24  41-43     PUPIL DATA    FTE VISUALLY HANDICAPPED I. 1974
HCFTE74   24  44-46     PUPIL DATA    FTE VISUALLY HANDICAPPED, 1974
1FTE74    24  47-50     PUPIL DATA    FTE EMOTIONALLY DISTURBED I. 1974
MDFTE74   24  51-54     PUPIL DATA    FTE EMOTIONALLY DISTURBED. 1974
MAFTE74   24  55-58     PUPIL DATA    FTE SOCIALLY MALADJUSTED, 1974
LIFTE74   24  59-63     PUPIL DATA    FTE SPECIFIC LEARNING DISABILITY I. 1974
LDFTE74   24  64-67     PUPIL DATA    FTE SPECIFIC LEARNING DISABILITY, 1974
FIFTE74   24  68-71     PUPIL DATA    FTE GIFTED I, 1974
HIFTE74   24  72-74     PUPIL DATA    HOSPITAL & HOMEBOUND I. 1974
XEFTE74   24  75-79     PUPIL DATA    EXCEPTIONAL EDUCATION TOTAL FTE. 1974
UMBER25   25   1- 2
ARD25     25   3- 4
E1FTE74   25  18-21     PUPIL DATA    FTE VOCATIONAL EDUCATION I, 1974
E2FTE74   25  22-26     PUPIL DATA    FTE VOCATIONAL EDUCATION II. 1974
E3FTE74   25  27-31     PUPIL DATA    FTE VOCATIONAL EDUCATION III, 1974
E4FTE74   25  32-36     PUPIL DATA    FTE VOCATIONAL EDUCATION IV, 1974
E5FTE74   25  37-41     PUPIL DATA    FTE VOCATIONAL EDUCATION V. 1974
E6FTE74   25  42-45     PUPIL DATA    FTE VOCATIONAL EDUCATION VI. 1974
ETFTE74   25  46-51     PUPIL DATA    VOCATIONAL EDUCATION TOTAL FTE. 1974
BEFTE74   25  52-56     PUPIL DATA    FTE ADULT BASIC ED & ADULT HS. 1974
CSFTE74   25  57-61     PUPIL DATA    FTE ADULT COMMUNITY SERVICE. 1974
ETFTE74   25  62-66     PUPIL DATA    ADULT EDUCATION TOTAL FTE, 1974
23FTE74   25  67-72     PUPIL DATA    FTE KINDERGARTEN & GRADES 1-3. 1974
41FTE74   25  73-79     PUPIL DATA    FTE GRADES 4-10. 1974
UMBER26   26   1- 2
ARD26     26   3- 4
12FTE74   26  18-22     PUPIL DATA    FTE GRADES 11 & 12. 1974
ETFTE74   26  23-29     PUPIL DATA    BASIC EDUCATION TOTAL FTE. 1974
TFTE74    26  30-37     PUPIL DATA    GRAND TOTAL FTE, 1974
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TOWFTE74   29  36-44      PUPIL DATA      TOTAL WEIGHTED FTE, 1974
NUMBER27    27   1- 2                      DISTRICT NUMBER IDENTIFICATION
CARD27      27   3- 4                      CARD NUMBER
TINCOME     27  19-31     1970 CENSUS     TOTAL INCOME
NURBAN      27  34-46     1970 CENSUS     NUMBER OF PEOPLE IN URBAN AREAS
NUMBER28    28   1- 2                      DISTRICT NUMBER IDENTIFICATION
CARD28      28   3- 4                      CARD NUMBER
NRURALNF    28   5- 10    1970 CENSUS     NUMBER OF RURAL NONFARM PEOPLE
NRURALF     28  11-16     1970 CENSUS     NUMBER OF RURAL FARM PEOPLE
INCOME1     28  17-22     1970 CENSUS     N FAMILIES W INCOME UNDER $1000
INCOME2     28  23-28     1970 CENSUS     N FAMILIES W INCOME $1000 - $1999
INCOME3     28  29-34     1970 CENSUS     N FAMILIES W INCOME $2000 - $2999
INCOME4     28  35-40     1970 CENSUS     N FAMILIES W INCOME $3000 - $3999
INCOME5     28  41-46     1970 CENSUS     N FAMILIES W INCOME $4000 - $4999
INCOME6     28  47-52     1970 CENSUS     N FAMILIES W INCOME $5000 - $5999
INCOME7     28  53-58     1970 CENSUS     N FAMILIES W INCOME $6000 - $6999
INCOME8     28  59-64     1970 CENSUS     N FAMILIES W INCOME $7000 - $7999
NUMBER29    29   1- 2                      DISTRICT NUMBER IDENTIFICATION
CARD29      29   3- 4                      CARD NUMBER
INCOME9     29   5- 9     1970 CENSUS     N FAMILIES W INCOME $8000 - $8999
INCOME10    29  10-14     1970 CENSUS     N FAMILIES W INCOME $9000 - $9999
INCOME11    29  15-19     1970 CENSUS     N FAMILIES W INCOME $10000 - $11999
INCOME12    29  20-24     1970 CENSUS     N FAMILIES W INCOME $12000 - $14999
INCOME13    29  25-29     1970 CENSUS     N FAMILIES W INCOME $15000 - $24999
INCOME14    29  30-34     1970 CENSUS     N FAMILIES W INCOME $25000 - $49999
INCOME15    29  35-40     1970 CENSUS     N FAMILIES W INCOME ABOVE $50000
NOTPOVPR    29  41-46     1970 CENSUS     N CHILDREN ABOVE POVERTY W PARENTS
NOTPOVNP    29  47-52     1970 CENSUS     N CHILDREN ABOVE POVERTY NOT W PARENT
POVP        29  53-58     1970 CENSUS     N OF CHILDREN BELOW POVERTY W PARENTS
POVNP       29  59-64     1970 CENSUS     N OF CHILDREN BELOW POVERTY NOT W PAR
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UMBER8      8   1- 2
ARD8        8   3- 4
PGEXP73     8  18-25      PUPIL DATA       NONPROGRAM SCHOOLS EXPENDITURES, 1973
CTEXP73     8  26-35      PUPIL DATA       TOTAL CURRENT EXPEND - ALL SCHOOLS, 1973
APOUT73     8  36-44      PUPIL DATA       CAPITAL OUTLAY, 1973
BTSR73      8  45-53      PUPIL DATA       DEBT SERVICE, 1973
TALE73      8  54-63      PUPIL DATA       TOTAL EXPENDITURES ALL FUNDS, 1973
CTAX73      8  64-72      PUPIL DATA       LOCAL TAX REVENUE, 1973
ILLAG73     8  73-80(4)   PUPIL DATA       TOTAL MILLAGE, 1973
UMBER9      9   1- 2
ARD9        9   3- 4
SRATE73     9  17-21                       ASSESSMENT RATIO, 1973
SVALU73     9  22-33                       NONEXEMPT ASSESSED VALUE, 1973
RLEF73      9  34-42      PUPIL DATA       LOCAL REQUIRED EFFORT, 1973
CLIV73      9  43-48(3)   PUPIL DATA       COST OF LIVING INDEX, 1973
TFREV73     9  49-58      PUPIL DATA       STATE REV FROM FTE B4 COST OF LIV, 1973
STALO73     9  59-68      PUPIL DATA       TOTAL STATE REV FROM SCHOOL FINANCE, 1973
UMBER10    10   1- 2
ARD10      10   3- 4
DA73       10  18-24      PROFILES         AVERAGE DAILY ATTENDANCE K-12, 1973
DIAN73     10  25-28      PROFILES         NUMBER OF INDIAN STUDENTS, 1973
LACK73     10  29-34      PROFILES         NUMBER OF BLACK STUDENTS, 1973
IAN73      10  35-38      PROFILES         NUMBER OF ORIENTAL STUDENTS, 1973
PANIS73    10  39-44      PROFILES         NUMBER OF SPAN-BACKGROUND STUDENTS, 1973
NGLO73     10  45-51      PROFILES         NUMBER OF ANGLO STUDENTS, 1973
INOR73     10  52-58      PROFILES         NUMBER OF MINORITY STUDENTS, 1973
TAL73      10  59-65      PROFILES         TOTAL NUMBER OF STUDENTS K-12, 1973
TAFF73     10  66-71      PROFILES         TOTAL FULL-TIME STAFF, 1973
UMBER11    11   1- 2
ARD11      11   3- 4
CREV74     11  18-26      PUPIL DATA       LOCAL REVENUE K-12, 1974
AREV74     11  27-35      PUPIL DATA       STATE REVENUE K-12, 1974
EDREV74    11  36-43      PUPIL DATA       FEDERAL REVENUE K-12, 1974
DSREV74    11  44-51      PUPIL DATA       FEDERAL THROUGH STATE REVENUE K-12, 1974
TREV74     11  52-61      PUPIL DATA       TOTAL REVENUE K-12, 1974
NREV74     11  62-70      PUPIL DATA       NONREVENUE RECEIPTS K-12, 1974
UMBER12    12   1- 2
ARD12      12   3- 4
MEXP74     12  19-24      PUPIL DATA       ADMINISTRATION EXPENDITURE, 1974
NSEXP74    12  25-34      PUPIL DATA       INSTRUCTIONAL EXPENDITURES, 1974
PREXP74    12  35-43      PUPIL DATA       OPERATING EXPENDITURES, 1974
ANEXP74    12  44-52      PUPIL DATA       MAINTENANCE EXPENDITURES, 1974
UXEXP74    12  53-61      PUPIL DATA       AUXILIARY SERVICES EXPENDITURES, 1974
IXEXP74    12  62-70      PUPIL DATA       FIXED EXPENDITURES, 1974
REXP74     12  71-80      PUPIL DATA       TOTAL CURRENT EXPEND - DAY SCHOOLS, 1974
UMBER13    13   1- 2
ARD13      13   3- 4
PGEXP74    13  18-25      PUPIL DATA       NONPROGRAM SCHOOLS EXPENDITURES, 1974
TEXP74     13  26-35      PUPIL DATA       TOTAL CURRENT EXPEND - ALL SCHOOLS, 1974
OUT74      13  36-44      PUPIL DATA       CAPITAL OUTLAY, 1974
BTSR74     13  45-53      PUPIL DATA       DEBT SERVICE, 1974
TALE74     13  54-63      PUPIL DATA       TOTAL EXPENDITURES ALL FUNDS, 1974
CTAX74     13  64-72      PUPIL DATA       LOCAL TAX REVENUE, 1974
ILLAG74    13  73-80(4)   PUPIL DATA       TOTAL MILLAGE, 1974
UMBER14    14   1- 2
ARD14      14   3- 4
SRATE74    14  17-21                       ASSESSMENT RATIO, 1974
SVALU74    14  22-33                       NONEXEMPT ASSESSED VALUE, 1974
DREFF74    14  34-42      PUPIL DATA       LOCAL REQUIRED EFFORT, 1974
CLIV74     14  43-48(3)   PUPIL DATA       COST OF LIVING INDEX, 1974
TFREV74    14  49-58      PUPIL DATA       STATE REV FROM FTE B4 COST OF LIV, 1974
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MICHIGAN FILE

A. Physical Characteristics

1. Tape ID: (VOL=SER=) SCHOOL
2. Number of tracks: 9
3. Density: 1600 bpi
4. DSN: MICHIGAN.FIN
5. LABEL: (1,SL)
6. Record type: fixed blocked
7. Record length: 434
8. Blocksize: 4340
9. Number of records: (see below)
10. Data representation: EBCDIC

B. General Description

1. The file contains data for school years 1969-70 through 1974-75. Each record contains all data for one district during one year. The records are grouped by year in the following order:

   1971-72 - 525 records
   1972-73 - 525 records
   1973-74 - 528 records
   1974-75 - 529 records
   1969-70 - 559 records
   1970-71 - 559 records

2. The variables are in the order listed in Section III. All numeric variables are in FORTRAN format (E14.8), while all alphanumeric variables (print format 'A') are in FORTRAN format (A4). There are no embedded blanks between fields.
3. Data Source: Rand Corporation, Santa Monica, California. Steve Carroll, Staff Economist.

C. Layout: List of Variables

```
VARIABLE  VARIABLE LABEL                                      MISSING PRT
    NAME                                                      VALUES  FMT

ID                                                              -99.   0

IDSUFFIX                                                        -99.   0

NAME1                                                           BT     A

NAME2                                                           BT     A

NAME3                                                           BT     A

NAME4                                                           BT     A

NAME5                                                           BT     A

NAME6                                                           BT     A

NAME7                                                           BT     A

TCHEXP    - MEAN YEARS TEACHER EXPERIENCE                       -99.   0

TCHWMAST  - PCT TEACHERS WITH MASTERS DEGREES                   -99.   0

SALRY     - MEAN TEACHER SALARY                                 -99.   0

NMINORTY  - NUMBER OF MINORITY PUPILS ENROLLED                  -99.   0

PCTMINOR  - PERCENT MINORITY PUPILS ENROLLED                    -99.   0

TCHPERPU  - NUMBER OF TEACHERS PER PUPIL                        -99.   0

STAIDMEM  - STATE AID MEMBERSHIP                                -99.   0

OPEXPPU   - OPERATING EXPENDITURE PER PUPIL                     -99.   0

EQVALMEM  - EQAL ASSESSED VALUE PER PUPIL 50%                   -99.   0

LOCREVPU  - LOCAL REVENUE PER PUPIL ST AID MEM                  -99.   0

STAIDPU   - STATE REVENUE PER PUPIL                             -99.   0

STLOCRPU  - STATE + LOCAL REVENUE PER PUPIL                     -99.   0

K12INSPU  - K TO 12 INSTRUCTIONAL EXPEND PER PUPIL              -99.   0

DROPOUTR  - DROP OUT RATE                                       -99.   0

OPMILLAG  - TOTAL OPERATING MILLAGE EQUALIZED                   -99.   0

YEAR      - SCHOOL YEAR OF RECORD                               -99.   0

TYPE      - TYPE OF DISTRICT                                    -99.   0
```

```
VARIABLE  VARIABLE LABEL                                      MISSING PRT
  NAME                                                         VALUES FMT


NMINSTAD  - NUMBER OF MINORITY PUP IN ST AID MEM                -99.   0

PPOVERTY  - PERCENT OF PUPILS FROM POVERTY FAMILIE              -99.   0

NPOVERTY  - NUMBER PUPILS FR POVERTY FAMILIES 1970              -99.   0

PURBAN    - PERCENT POPULATION IN URBAN AREAS 1970              -99.   0

NURBAN    - NUMBER OF PERSONS IN URBAN AREAS 1970               -99.   0

AVGINCOM  - MEAN FAMILY INCOME 1970                             -99.   0

FEDMONY1  - FEDERAL REVENUE - DIRECT                            -99.   0

FEDMONY2  - FEDERAL REVENUE THRU STATE                          -99.   0

TGENFUND  - TOTAL GENERAL FUND EXPENDITURES                     -99.   0

COMMTYPE  - COMMUNITY TYPE                                      -99.   0
                      1. METRO CORE
                      2. CITY
                      3. TOWN
                      4. URBAN FRINGE
                      5. RURAL
```

NEW MEXICO FILE

A. Physical Characteristics

1. Tape ID: (VOL=SER=) SCHOOL
2. Number of tracks: 9
3. Density: 1600 bpi
4. DSN: NEWMEX.FIN
5. LABEL: (5,SL)
6. Record type: fixed blocked
7. Record length: 80
8. Blocksize: 1600
9. Number of records: 2640
10. Data representation: EBCDIC

B. General Description

1. Data for all years in a district are contained on 30, 80-byte card-image records. The last record in each set of 30 is completely blank. Missing values are represented by blanks. The data formats and variable descriptions are in Part C.
2. Data source: Published reports of the New Mexico Department of Education.

C. Layout

1. List of Variables
2. Format of Variables

```
VARIABLE  VARIABLE LABEL
  NAME

[illegible]   DISTRICT NUMBER

CARD1     CARD NUMBER

NAME1

NAME2

NAME3

NAME4

RATIO72   PUPIL-TEACHER RATIO, 1972

AVSAL72   AVERAGE TEACHER'S SALARY, 1972

AVEXP72   TEACHERS' AVER YRS EXPERIENCE, 1972

MA72      PCT TCHRS W MA OR HIGHER DEGREE, 1972

COLL72    PCT GRADUATES ATTENDING COLLEGE, 1972

VOCSCH72  PCT GRADUATES ATTENDING VOC SCH, 1972

EMPLOY72  PCT GRADUATES EMPLOYED, 1972

PANGLO72  PCT ANGLO STUDENTS, 1972

PSPAN72   PCT SPANISH SURNAME STUDENTS, 1972
```

VARIABLE NAME	VARIABLE LABEL
PIND72	PCT AMERICAN INDIAN STUDENTS, 1972
TITLE172	PCT TITLE I PARTICIPANTS, 1972
GRADS72	PCT HIGH SCHOOL GRADUATES, 1972
NUMBER2	
CARD2	
RATIO73	PUPIL-TEACHER RATIO, 1973
AVSAL73	AVERAGE TEACHER'S SALARY, 1973
AVEXP73	TEACHERS' AVER YRS EXPERIENCE, 1973
MA73	PCT TCHRS W MA OR HIGHER DEGREE, 1973
COLL73	PCT GRADUATES ATTENDING COLLEGE, 1973
VOCSCH73	PCT GRADUATES ATTENDING VOC SCH, 1973
EMPLOY73	PCT GRADUATES EMPLOYED, 1973
PANGLO73	PCT ANGLO STUDENTS, 1973
PSPAN73	PCT SPANISH SURNAME STUDENTS, 1973
PIND73	PCT AMERICAN INDIAN STUDENTS, 1973
TITLE173	[illegible] ITLE I PARTICIPANTS, 1973
GRADS73	PCT HIGH SCHOOL GRADUATES, 1973
INC[illegible]73	MEDIAN FAMILY INCOME, 1973
NUMBER3	
CARD3	
RATIO74	PUPIL-TEACHER RATIO, 1974

VARIABLE NAME	VARIABLE LABEL
AVSAL74	AVERAGE TEACHER'S SALARY, 1974
AVEXP74	TEACHERS' AVER YRS EXPERIENCE, 1974
MA74	PCT TCHRS W MA OR HIGHER DEGREE, 1974
COLL74	PCT GRADUATES ATTENDING COLLEGE, 1974
VOCSCH74	PCT GRADUATES ATTENDING VOC SCH, 1974
EMPLOY74	PCT GRADUATES EMPLOYED, 1974
PANGLO74	PCT ANGLO STUDENTS, 1974
PSPAN74	PCT SPANISH SURNAME STUDENTS, 1974
PIND74	PCT AMERICAN INDIAN STUDENTS, 1974
TITLEI74	PCT TITLE I PARTICIPANTS, 1974
GRADS74	PCT HIGH SCHOOL GRADUATES, 1974
INCOME74	MEDIAN FAMILY INCOME, 1974
NUMBER4	
CARD4	
RATIO75	PUPIL-TEACHER RATIO, 1975
AVSAL75	AVERAGE TEACHER'S SALARY, 1975
AVEXP75	TEACHERS' AVER YRS EXPERIENCE, 1975
MA75	PCT TCHRS W MA OR HIGHER DEGREE, 1975
COLL75	PCT GRADUATES ATTENDING COLLEGE, 1975
VOCSCH75	PCT GRADUATES ATTENDING VOC SCH, 1975
EMPLOY75	PCT GRADUATES EMPLOYED, 1975

VARIABLE NAME	VARIABLE LABEL
PANGLO75	PCT ANGLO STUDENTS. 1975
PSPAN75	PCT SPANISH SURNAME STUDENTS. 1975
PIND75	PCT AMERICAN INDIAN STUDENTS. 1975
TITLE175	PCT TITLE I PARTICIPANTS, 1975
GRADS75	PCT HIGH SCHOOL GRADUATES, 1975
NGRADS75	NUMBER HIGH SCHOOL GRADUATES, 1975
NUMBER5	
CARD5	
LEVY72	DISTRICT SCHOOL TAX LEVY, 1972
LSTOT72	TOTAL LOCAL SOURCES, 1972
CSTOT72	TOTAL COUNTY SOURCES, 1972
BASIC72	BASIC PROGRAM, 1972
SSTOT72	TOTAL STATE SOURCES. 1972
FSTOT72	TOTAL FEDERAL SOURCES. 1972 .
OPFUND72	TOTAL OPERATIONAL FUND, 1972
NUMBER6	
CARD6	
ADM72	180 DAY ADM, 1972
TSAL72	TEACHERS' SALARIES. 1972
INSTR72	TOTAL INSTRUCTIONAL EXPENDITURE, 1972
EXPEND72	TOTAL OPERATION EXPENDITURES, 1972

VARIABLE NAME	VARIABLE LABEL
BLDG72	TOTAL GEN BUILDING FUND CREDIT, 1972
DEBT72	TOTAL DEBT SERVICE, 1972
GRTOT72	GRAND TOTAL EXPENDITURES, 1972
NUMBER7	
CARD7	
TITLEI72	TITLE I EXPENDITURES, 1972
OUTLAY72	CAPITAL OUTLAY, 1972
BFUNDS72	BUILDING FUNDS EXPENDITURES, 1972
DSTVAL72	DISTRICT VALUATION, 1972
NUMBER8	
CARD8	
LEVY73	DISTRICT SCHOOL TAX LEVY, 1973
LSTOT73	TOTAL LOCAL SOURCES, 1973
CSTOT73	TOTAL COUNTY SOURCES, 1972
BASIC73	BASIC PROGRAM, 1973
SSTOT73	TOTAL STATE SOURCES, 1973
FSTOT73	TOTAL FEDERAL SOURCES, 1973
OPFUND73	TOTAL OPERATIONAL FUND, 1973
NUMBER9	
CARD9	
ADA73	180 DAY ADM, 1973

```
VARIABLE  VARIABLE LABEL
    NAME

TSAL73    TEACHERS' SALARIES, 1973

INSTR73   TOTAL INSTRUCTIONAL EXPENDITURE, 1973

EXPEND73  TOTAL OPERATION EXPENDITURES, 1973

BLDG73    TOTAL GEN BUILDING FUND CREDIT, 1973

DEBT73    TOTAL DEBT SERVICE, 1973

GRTOT73   GRAND TOTAL EXPENDITURES, 1973

NUMBER10

CARD10

TITLEI73  TITLE I EXPENDITURES, 1973

OUTLAY73  CAPITAL OUTLAY, 1973

BFUNDS73  BUILDING FUNDS EXPENDITURES, 1973

DSTVAL73  DISTRICT VALUATION, 1973

NUMBER11

CARD11

LEVY74    DISTRICT SCHOOL TAX LEVY, 1974

LSTOT74   TOTAL LOCAL SOURCES, 1974

EQUAL74   STATE EQUALIZATION GUARANTEE, 1974

SSTOT74   TOTAL STATE SOURCES, 1974

FSTOT74   TOTAL FEDERAL SOURCES, 1974

OPFUND74  TOTAL OPERATIONAL FUND, 1974

NUMBER12
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```
VARIABLE  VARIABLE LABEL
    NAME

CARD12

ADM74     180 DAY ADM, 1974

TSAL74    TEACHERS' SALARIES, 1974

INSTR74   TOTAL INSTRUCTIONAL EXPENDITURE, 1974

EXPEND74  TOTAL OPERATION EXPENDITURES, 1974

BLDG74    TOTAL GEN BUILDING FUND CREDIT, 1974

DEBT74    TOTAL DEBT SERVICE, 1974

GRTOT74   GRAND TOTAL EXPENDITURES, 1974

NUMBER13

CARD13

TITLEI74  TITLE I EXPENDITURES, 1974

OUTLAY74  CAPITAL OUTLAY, 1974

BFUNDS74  BUILDING FUNDS EXPENDITURES, 1974

DSTVAL74  DISTRICT VALUATION, 1974

NUMBER14

CARD14

LEVY75    DISTRICT SCHOOL TAX LEVY, 1975

LSTOT75   TOTAL LOCAL SOURCES, 1975

EQUAL75   STATE EQUALIZATION GUARANTEE, 1975

SSTOT75   TOTAL STATE SOURCES, 1975

FSTOT75   TOTAL FEDERAL SOURCES, 1975
```

VARIABLE NAME	VARIABLE LABEL
OPFUND75	TOTAL OPERATIONAL FUND, 1975
NUMBER15	
CARD15	
ADM75	180 DAY ADM, 1975
TSAL75	TEACHERS' SALARIES, 1975
INSTR75	TOTAL INSTRUCTIONAL EXPENDITURE, 1975
EXPEND75	TOTAL OPERATION EXPENDITURES, 1975
BLDG75	TOTAL GEN BUILDING FUND CREDIT, 1975
DEBT75	TOTAL DEBT SERVICE, 1975
GRTOT75	GRAND TOTAL EXPENDITURES, 1975
NUMBER16	
CARD16	
TITLEI75	TITLE I EXPENDITURES, 1975
OUTLAY75	CAPITAL OUTLAY, 1975
BFUNDS75	BUILDING FUNDS EXPENDITURES, 1975
DSTVAL75	DISTRICT VALUATION, 1975
ENTITL75	TITLE I ENTITLEMENTS, 1975
INSTRS75	TOTAL INSTRUCTIONAL SUPPORT, 1975
NUMBER17	
CARD17	
LAW87472	PUBLIC LAW 874, 1972

VARIABLE NAME	VARIABLE LABEL
FEDPRJ72	FEDERAL PROJECTS FUND, 1972
OTHFED72	ALL OTHER FEDERAL FUNDS, 1972
SPECED72	SPECIAL EDUCATION REVENUE. 1972
GCTAX72	GENERAL COUNTY SCHOOL TAX. 1972
TXRATE72	TOTAL TAX RATE, 1972
NUMBER18	
CARD18	
LAW87473	PUBLIC LAW 874. 1973
FEDPRJ73	FEDERAL PROJECTS FUND. 1973
OTHFED73	ALL OTHER FEDERAL FUNDS, 1973
SPECED73	SPECIAL EDUCATION REVENUE, 1973
GCTAX73	GENERAL COUNTY SCHOOL TAX, 1973
TXRATE73	TOTAL TAX RATE. 1973
NUMBER19	
CARD19	
LAW87474	PUBLIC LAW 874, 1974
FEDPRJ74	FEDERAL PROJECTS FUND, 1974
OTHFED74	ALL OTHER FEDERAL FUNDS. 1974
TXRATE74	TOTAL TAX RATE, 1974
SALES74	ASSESSMENT-SALES RATIO. 1974
NUMBER20	

VARIABLE NAME	VARIABLE LABEL
CARD20	
LAW87475	PUBLIC LAW 874, 1975
FEDPRJ75	FEDERAL PROJECTS FUND, 1975
OTHFED75	ALL OTHER FEDERAL FUNDS, 1975
TXRATE75	TOTAL TAX RATE, 1975
SALES75	ASSESSMENT-SALES RATIO, 1975
NUMBER21	
CARD21	
TINCOME	TOTAL INCOME-CENSUS
NURBAN	NUMBER OF URBAN PEOPLE-CENSUS
NRURALNF	NUMBER OF RURAL NONFARM PEOPLE-CENSUS
NRURALF	NUMBER OF RURAL FARM PEOPLE-CENSUS
INCOME1	NUMBER OF FAMILIES UNDER $1,000
INCOME2	NUMBER OF FAMILIES $ 1,000 - $ 1,999
INCOME3	NUMBER OF FAMILIES $ 2,000 - $ 2,999
INCOME4	NUMBER OF FAMILIES $ 3,000 - $ 3,999
INCOME5	NUMBER OF FAMILIES $ 4,000 - $ 4,999
NUMBER22	
CARD22	
INCOME6	NUMBER OF FAMILIES $ 5,000 - $ 5,999
INCOME7	NUMBER OF FAMILIES $ 6,000 - $ 6,999

```
VARIABLE  VARIABLE LABEL
    NAME

INCOME8   NUMBER OF FAMILIES $ 7,000 - $ 7.999

INCOME9   NUMBER OF FAMILIES $ 8,000 - $ 8,999

INCOME10  NUMBER OF FAMILIES $ 9,000 - $ 9,999

INCOME11  NUMBER OF FAMILIES $10,000 - $11.999

INCOME12  NUMBER OF FAMILIES $12,000 - $14,999

INCOME13  NUMBER OF FAMILIES $15,000 - $24,999

INCOME14  NUMBER OF FAMILIES $25,000 - $49,999

INCOME15  NUMBER OF FAMILIES ABOVE $50,000

NUMBER23

CARD23

NOTPOVP   N OF CHILD ABOVE POV LIVING W PARENTS

NOTPOVNP  N OF CHILD ABOVE POV NOT W PARENTS

POVP      N OF CHILD BELOW POV LIVING W PARENTS

POVNP     N OF CHILD BELOW POV NOT W PARENTS

DISTTYPE  DISTRICT TYPE OF POPULATION
                              1. S.M.S.A.
                              2. OVER 10000
                              3. 1000-10000 OR INCORP
                              4. UNINCORPORATED

NUMBER24  DISTRICT NUMBER

CARD24    CARD NUMBER

LEVY76    DISTRICT SCHOOL TAX LEVY, 1976

LSTOT76   TOTAL LOCAL SOURCES, 1976
```

VARIABLE NAME	VARIABLE LABEL
EQUAL76	STATE EQUALIZATION GUARANTEE, 1976
SSTOT76	TOTAL STATE SOURCES, 1976
FSTOT76	TOTAL FEDERAL SOURCES, 1976
OPFUND76	TOTAL OPERATIONAL FUND, 1976
NUMBER25	DISTRICT NUMBER
CARD25	CARD NUMBER
ADM76	180 DAY ADM, 1976
TSAL76	TEACHERS' SALARIES, 1976
INSTR76	TOTAL INSTRUCTIONAL EXPENDITURE, 1976
EXPEND76	TOTAL OPERATION EXPENDITURE, 1976
BLDG76	TOTAL GEN BUILDING FUND CREDIT, 1976
DEBT76	TOTAL DEBT SERVICE, 1976
GRTOT76	GRAND TOTAL EXPENDITURES, 1976
NUMBER26	DISTRICT NUMBER
CARD26	CARD NUMBER
TITLEI76	TITLE I EXPENDITURES, 1976
OUTLAY76	CAPITAL OUTLAY, 1976
BFUNDS76	BUILDING FUNDS EXPENDITURES, 1976
DSTVAL76	DISTRICT VALUATION, 1976
INSTRS76	TOTAL INSTRUCTIONAL SUPPORT, 1976
NUMBER27	DISTRICT NUMBER

VARIABLE NAME	VARIABLE LABEL
CARD27	CARD NUMBER
LAW87476	PUBLIC LAW 874, 1976
FEDPROJ76	FEDERAL PROJECTS FUND, 1976
OTHFED76	ALL OTHER FEDERAL FUNDS, 1976
TXRATE76	TOTAL TAX RATE, 1976
NUMBER28	DISTRICT NUMBER
CARD28	CARD NUMBER
KFTE74	KINDERGARTEN F.T.E., 1974
BILFTE74	BILINGUAL EDUCATION F.T.E., 1974
VOCFTE74	VOCATIONAL EDUCATION F.T.E., 1974
ABFTE74	SPECIAL ED CLASSES A & B F.T.E., 1974
CFTE74	SPECIAL ED CLASS C F.T.E., 1974
DFTE74	SPECIAL ED CLASS D F.T.E., 1974
TEXP74	TEACHER TRAINING & EXPER INDEX, 1974
ESPARS74	ELEM & JR HIGH SPARSITY INDEX, 1974
SSPARS74	SENIOR HIGH SPARSITY INDEX, 1974
NUMBER29	
CARD29	
KFTE75	KINDERGARTEN F.T.E., 1975
BILFTE75	BILINGUAL EDUCATION F.T.E., 1975
VOCFTE75	VOCATIONAL EDUCATION F.T.E., 1975
ABFTE75	SPECIAL ED CLASSES A & B F.T.E., 1975
CFTE75	SPECIAL ED CLASS C F.T.E., 1975
DFTE75	SPECIAL ED CLASS D F.T.E., 1975
TEXP75	TEACHER TRAINING & EXPER INDEX, 1975
ESPARS75	ELEM & JR HIGH SPARSITY INDEX, 1975
SSPARS75	SENIOR HIGH SPARSITY INDEX, 1975

```
ACCORDING TO YOUR INPUT FORMAT, VARIABLES ARE TO BE READ AS FOLLOWS

VARIABLE  FORMAT  RECORD    COLUMNS

NUMBER1   F 2. 0       1     1-   2
CARD1     F 2. 0       1     3-   4
NAME1       A 4        1     5-   9
NAME2       A 4        1    10-  13
NAME3       A 4        1    14-  17
NAME4       A 2        1    18-  19
RATIO72   F 4. 1       1    20-  23
AVSAL72   F 6. 0       1    24-  29
AVEXP72   F 5. 1       1    30-  34
MA72      F 3. 0       1    35-  37
COLL72    F 3. 0       1    38-  40
VOCSCH72  F 3. 0       1    41-  43
EMPLOY72  F 3. 0       1    44-  46
RANGLO72  F 5. 1       1    47-  51
RSPAN72   F 5. 1       1    52-  56
RIND72    F 5. 1       1    57-  61
TITLE172  F 5. 1       1    62-  66
GRADS72   F 3. 0       1    67-  69
NUMBER2   F 2. 0       2     1-   2
CARD2     F 2. 0       2     3-   4
RATIO73   F 4. 1       2    20-  23
AVSAL73   F 6. 0       2    24-  29
AVEXP73   F 5. 1       2    30-  34
MA73      F 3. 0       2    35-  37
COLL73    F 3. 0       2    38-  40
VOCSCH73  F 3. 0       2    41-  43
EMPLOY73  F 3. 0       2    44-  46
RANGLU73  F 5. 1       2    47-  51
RSPAN73   F 5. 1       2    52-  56
RIND73    F 5. 1       2    57-  61
TITLE173  F 5. 1       2    62-  66
GRADS73   F 3. 0       2    67-  69
INCOME73  F 5. 0       2    70-  74
NUMBER3   F 2. 0       3     1-   2
CARD3     F 2. 0       3     3-   4
RATIO74   F 4. 1       3    20-  23
AVSAL74   F 6. 0       3    24-  29
AVEXP74   F 5. 1       3    30-  34
MA74      F 3. 0       3    35-  37
COLL74    F 3. 0       3    38-  40
VOCSCH74  F 3. 0       3    41-  43
EMPLOY74  F 3. 0       3    44-  46
RANGLO74  F 5. 1       3    47-  51
RSPAN74   F 5. 1       3    52-  56
RIND74    F 5. 1       3    57-  61
TITLE174  F 5. 1       3    62-  66
GRADS74   F 3. 0       3    67-  69
INCOME74  F 5. 0       3    70-  74
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VARIABLE  FORMAT  RECORD    COLUMNS

NUMBER4   F 2. 0       4     1-    2
CARD4     F 2. 0       4     3-    4
RATIO75   F 4. 1       4    20-   23
AVSAL75   F 6. 0       4    24-   29
AVEXP75   F 5. 1       4    30-   34
MA75      F 3. 0       4    35-   37
COLL75    F 3. 0       4    38-   40
VOCSCH75  F 3. 0       4    41-   43
EMPLOY75  F 3. 0       4    44-   46
RANGLO75  F 5. 1       4    47-   51
RSPAN75   F 5. 1       4    52-   56
RIND75    F 5. 1       4    57-   61
TITLE175  F 5. 1       4    62-   66
GRADS75   F 3. 0       4    67-   69
NGRADS75  F 5. 0       4    75-   79
NUMBER5   F 2. 0       5     1-    2
CARD5     F 2. 0       5     3-    4
LEVY72    F 8. 0       5    20-   27
LSTOT72   F 8. 0       5    28-   35
CSTOT72   F 8. 0       5    36-   43
BASIC72   F 9. 0       5    44-   52
SSTOT72   F 9. 0       5    53-   61
FSTOT72   F 8. 0       5    62-   69
CPFUND72  F 9. 0       5    70-   78
NUMBER6   F 2. 0       6     1-    2
CARD6     F 2. 0       6     3-    4
ADM72     F 6. 0       6    20-   25
TSAL72    F 9. 0       6    26-   34
INSTR72   F 9. 0       6    35-   43
EXPEND72  F 9. 0       6    44-   52
BLDG72    F 8. 0       6    53-   60
DEBT72    F 8. 0       6    61-   68
GRTOT72   F 9. 0       6    69-   77
NUMBER7   F 2. 0       7     1-    2
CARD7     F 2. 0       7     3-    4
TITLEI72  F 7. 0       7    20-   26
OUTLAY72  F 7. 0       7    27-   33
RFUNDS72  F 8. 0       7    34-   41
DSTVAL72  F10. 0       7    42-   51
NUMBER8   F 2. 0       8     1-    2
CARD8     F 2. 0       8     3-    4
LEVY73    F 8. 0       8    20-   27
LSTOT73   F 8. 0       8    28-   35
CSTOT73   F 8. 0       8    36-   43
BASIC73   F 9. 0       8    44-   52
SSTOT73   F 9. 0       8    53-   61
FSTOT73   F 8. 0       8    62-   69
CPFUND73  F 9. 0       8    70-   78
NUMBER9   F 2. 0       9     1-    2
CARD9     F 2. 0       9     3-    4
ADM73     F 6. 0       9    20-   25
TSAL73    F 9. 0       9    26-   34
INSTR73   F 9. 0       9    35-   43
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VARIABLE  FORMAT  RECORD    COLUMNS

EXPEND73  F 9. 0      9    44-  52
BLDG73    F 8. 0      9    53-  60
DEBT73    F 8. 0      9    61-  68
GRTOT73   F 9. 0      9    69-  77
NUMBER10  F 2. 0     10     1-   2
CARD10    F 2. 0     10     3-   4
TITLEI73  F 7. 0     10    20-  26
OUTLAY73  F 7. 0     10    27-  33
RFUNDS73  F 8. 0     10    34-  41
DSTVAL73  F10. 0    *10    42-  51
NUMBER11  F 2. 0     11     1-   2
CARD11    F 2. 0     11     3-   4
LEVY74    F 8. 0     11    20-  27
LSTOT74   F 8. 0     11    28-  35
EQUAL74   F 9. 0     11    44-  52
SSTOT74   F 9. 0     11    53-  61
FSTOT74   F 8. 0     11    62-  69
CPFUND74  F 9. 0     11    70-  78
NUMBER12  F 2. 0     12     1-   2
CARD12    F 2. 0     12     3-   4
ADM74     F 6. 0     12    20-  25
TSAL74    F 9. 0     12    26-  34
INSTR74   F 9. 0     12    35-  43
EXPEND74  F 9. 0     12    44-  52
BLDG74    F 8. 0     12    53-  6
DEBT74    F 8. 0     12    61-  6
GRTOT74   F 9. 0     12    69-  7
NUMBER13  F 2. 0     13     1-
CARD13    F 2. 0     13     3-
TITLEI74  F 7. 0     13    20-  26
OUTLAY74  F 7. 0     13    27-  33
RFUNDS74  F 8. 0     13    34-  41
DSTVAL74  F10. 0     13    42-  51
NUMBER14  F 2. 0     14     1-   2
CARD14    F 2. 0     14     3-   4
LEVY75    F 8. 0     14    20-  27
LSTOT75   F 8. 0     14    28-  35
EQUAL75   F 9. 0     14    44-  52
SSTOT75   F 9. 0     14    53-  61
FSTOT75   F 8. 0     14    62-  69
CPFUND75  F 9. 0     14    70-  78
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```
VARIABLE  FORMAT  RECORD    COLUMNS

NUMBER15  F 2. 0      15     1-   2
CARD15    F 2. 0      15     3-   4
ADM75     F 6. 0      15    20-  25
TSAL75    F 9. 0      15    26-  34
INSTR75   F 9. 0      15    35-  43
EXPEND75  F 9. 0      15    44-  52
BLDG75    F 8. 0      15    53-  60
DEBT75    F 8. 0      15    61-  68
GRTOT75   F 9. 0      15    69-  77
NUMBER16  F 2. 0      16     1-   2
CARD16    F 2. 0      16     3-   4
TITLEI75  F 7. 0      16    20-  26
OUTLAY75  F 7. 0      16    27-  33
RFUNDS75  F 8. 0      16    34-  41
DSTVAL75  F10. 0      16    42-  51
ENTITL75  F 8. 0      16    52-  59
INSTRS75  F 9. 0      16    60-  68
NUMBER17  F 2. 0      17     1-   2
CARD17    F 2. 0      17     3-   4
LAW87472  F 8. 0      17    20-  27
FEDPRJ72  F 8. 0      17    28-  35
OTHFED72  F 8. 0      17    36-  43
SPECED72  F 8. 0      17    44-  51
COTAX72   F 8. 0      17    52-  59
TXRATE72  F 8. 5      17    60-  67
NUMBER18  F 2. 0      18     1-   2
CARD18    F 2. 0      18     3-   4
LAW87473  F 8. 0      18    20-  27
FEDPRJ73  F 8. 0      18    28-  35
OTHFED73  F 8. 0      18    36-  43
SPECED73  F 8. 0      18    44-  51
COTAX73   F 8. 0      18    52-  59
TXRATE73  F 8. 6      18    60-  67
NUMBER19  F 2. 0      19     1-   2
CARD19    F 2. 0      19     3-   4
LAW87474  F 8. 0      19    20-  27
FEDPRJ74  F 8. 0      19    28-  35
OTHFED74  F 8. 0      19    36-  43
TXRATE74  F 8. 4      19    60-  67
SALES74   F 6. 1      19    68-  73
NUMBER20  F 2. 0      20     1-   2
```

```
VARIABLE   FORMAT   RECORD     COLUMNS

CARD20      F 2. 0        20        3-    4
LAW87475    F 8. 0        20       20-   27
FEDPRJ75    F 8. 0        20       28-   35
OTHFED75    F 8. 0        20       36-   43
TXRATE75    F 8. 6        20       60-   67
SALES75     F 6. 1        20       68-   73
NUMBER21    F 2. 0        21        1-    2
CARD21      F 2. 0        21        3-    4
TINCOME     F 9. 0        21       23-   31
NURBAN      F 7. 0        21       32-   38
NRURALNF    F 6. 0        21       39-   44
NRURALF     F 5. 0        21       45-   49
INCOME1     F 5. 0        21       50-   54
INCOME2     F 5. 0        21       55-   59
INCOME3     F 5. 0        21       60-   64
INCOME4     F 5. 0        21       65-   69
INCOME5     F 5. 0        21       70-   74
NUMBER22    F 2. 0        22        1-    2
CARD22      F 2. 0        22        3-    4
INCOME6     F 5. 0        22       20-   24
INCOME7     F 5. 0        22       25-   29
INCOME8     F 5. 0        22       30-   34
INCOME9     F 5. 0        22       35-   39
INCOME10    F 5. 0        22       40-   44
INCOME11    F 5. 0        22       45-   49
INCOME12    F 5. 0        22       50-   54
INCOME13    F 6. 0        22       55-   60
INCOME14    F 5. 0        22       61-   65
INCOME15    F 4. 0        22       66-   69
NUMBER23    F 2. 0        23        1-    2
CARD23      F 2. 0        23        3-    4
NCTPOVP     F 6. 0        23       20-   25
NCTPOVNP    F 6. 0        23       26-   31
POVP        F 6. 0        23       32-   37
POVNP       F 6. 0        23       38-   43
DISTTYPE    F 1. 0        23       45-   45
NUMBER24    F 2. 0        24        1-    2
CARD24      F 2. 0        24        3-    4
LEVY76      F 8. 0        24       20-   27
LSTOT76     F 8. 0        24       28-   35
EQUAL76     F 9. 0        24       44-   52
```

```
VARIABLE  FORMAT  RECORD    COLUMNS

SSTOT76    F 9. 0       24    53-  61
FSTOT76    F 8. 0       24    62-  69
ORFUND76   F 9. 0       24    70-  78
NUMBER25   F 2. 0       25     1-   2
CARD25     F 2. 0       25     3-   4
ADM76      F 6. 0       25    20-  25
TSAL76     F 9. 0       25    26-  34
INSTR76    F 9. 0       25    35-  43
EXPEND76   F 9. 0       25    44-  52
BLDG76     F 8. 0       25    53-  60
DEST76     F 8. 0       25    61-  68
GFTOT76    F 9. 0       25    69-  77
NUMBER26   F 2. 0       26     1-   2
CARD26     F 2. 0       26     3-   4
TITLEI76   F 7. 0       26    20-  26
OUTLAY76   F 7. 0       26    27-  33
BFUNDS76   F 8. 0       26    34-  41
DSTVAL76   F10. 0       26    42-  51
INSTRS76   F 9. 0       26    52-  60
NUMBER27   F 2. 0       27     1-   2
CARD27     F 2. 0       27     3-   4
LANS7476   F 8. 0       27    20-  27
FEDPRJ76   F 8. 0       27    28-  35
OTHFED76   F 8. 0       27    36-  43
TXRATE76   F 4. 0       27    44-  47
NUMBER28   F 2. 0       28     1-   2
CARD28     F 2. 0       28     3-   4
KFTE74     F 6. 2       28    20-  25
PILFTE74   F 7. 2       28    26-  32
VOCFTE74   F 8. 2       28    33-  40
AFFTE74    F 6. 2       28    41-  46
CFTE74     F 7. 2       28    47-  53
DFTE74     F 7. 2       28    54-  60
TEXP74     F 6. 3       28    61-  66
FSPARS74   F 7. 3       28    67-  73
SSPARS74   F 7. 3       28    74-  80
NUMBER29   F 2. 0       29     1-   2
CARD29     F 2. 0       29     3-   4
KFTE75     F 6. 2       29    20-  25
PILFTE75   F 7. 2       29    26-  32
VOCFTE75   F 8. 2       29    33-  40
AFFTE75    F 6. 2       29    41-  46
CFTE75     F 7. 2       29    47-  53
DFTE75     F 7. 2       29    54-  60
TEMP75     F 6. 3       29    61-  66
FSPARS75   F 7. 3       29    67-  73
SSPARS75   F 7. 3       29    74-  80
```

TEXAS FILE

A. Physical Characteristics

1. Tape ID: (VOL=SER=) SCHOOL
2. Number of tracks: 9
3. Density: 1600 bpi
4. DSN: TEXAS.FIN
5. LABEL: (4,SL)
6. Record type: fixed blocked
7. Record length: 2006
8. Blocksize: 6018
9. Number of records: 1090
10. Data representation: EBCDIC

B. General Description

1. The file contains data for school years 1974-75 and 1975-76. Each record contains data for both years, as well as from the 1970 census.
2. The variables are in the order listed in Section C. All numeric variables are in FORTRAN format (E14.8), alphanumeric variables (print format 'A') are in FORTRAN format (A4). There are no blanks between fields.
3. Data source: Texas Education Agency, Management and Information Services; Ronald Knight, Director.

C. Layout: List of Variables

```
VARIABLE  VARIABLE LABEL                                          MISSING PRT
  NAME                                                            VALUES  FMT

NUMBER1   - COUNTY DISTRICT NUMBER                                 NONE    0

NAME1                                                              NONE    A

NAME2                                                              NONE    A

NAME3                                                              NONE    A

NAME4                                                              NONE    A

NAME5                                                              NONE    A

NAME6                                                              NONE    A

URBNCODE  - URBAN-RURAL CODE                                        0.     0
                                                                   -9.
                         1. MAJOR URBAN
                         2. OTHER CENTRAL CITIES
                         3. FAST GROWING SUBURBN
                         4. STABLE GROWING SUB
                         5. NONMETRO W 1000+ ADA
                         6. NONMETRO WITH TOWN
                         7. RURAL

GRADA74   - GROSS AVERAGE DAILY ATTENDANCE 1974-75                 NONE    2

GRADA75   - GROSS AVERAGE DAILY ATTENDANCE 1975-76                 NONE    2

GOERVADA  - GOER MARKET VALUE PER ADA 1975-6                        -9.    0
```

VARIABLE NAME	VARIABLE LABEL	MISSING VALUES	PRT FMT
ENTS	- TOTAL NUMBER OF STUDENTS	NONE	0
BLAKADA1	- NUMBER BLACKS IN ADA 1974-5	-9.	0
SPANADA1	- NUMBER OF CHICANOS IN ADA 1974-5	-9.	0
ANGLADA1	- NUMBER OF ANGLOS IN ADA 1974-5	-9.	0
PBLACK1	- PERCENT BLACK PUPILS IN ADA 1974-5	-9.	0
PSPANIS1	- PERCENT CHICANO PUPILS IN ADA 1974-5	-9.	0
PANGLO1	- PERCENT ANGLO PUPILS IN ADA 1974-5	-9.	0
MVADA74	- MSA MARKET VALUE PER ADA 1974	-9.	0
ASRATIO1	- ASSESSMENT-SALES RATIO 1974-5	-9.	0
EFFTTAX1	-EFFECTIVE TOTAL TAX ON $100 MSA 74-5	-9.00	2
EFFMTAX1	-EFFECTIVE MAINT TAX ON $100 MSA 74-5	0.0 -9.00	2
MANTTAX1	- EST MAINT TAX REV PER $100 MSA 1974-5	0.0 -9.00	2
ENRIADA1	- LOCAL MAINT ENRICHMENT PER ADA 1974-5	-9.	0
SLFDADA1	- TOTAL FOUNDATION COST PER ADA 74-5	-9.	0
LREVADA1	- LOCAL REVENUE PER ADA 1974-5	-9.	0
SREVADA1	- STATE REVENUE PER ADA 1974-5	-9.	0
FREVADA1	- FEDERAL REVENUE PER ADA 1974-5	-9.	0
TRVADA1	- TOTAL REVENUE PER ADA 1974-5	-9.	0
NONRADA1	- NON REVENUE RECEIPTS PER ADA 1974-5	-9.	0
SFDNADA1	- STATE FOUNDATION AID PER ADA 1974-5	-9.	0

```
VARIABLE  VARIABLE LABEL                                          MISSING PRT
  NAME                                                            VALUES  FMT

INSTADA1  - INSTRUCTION EXPENDITURE PER ADA 1974-5                  -9.    0

SPEDADA1  - SPECIAL ED EXPENDITURE PER ADA 1974-5                   -9.    0

VCEDADA1  - VOCATIONAL ED EXPEND PER ADA 1974-5                     -9.    0

COMPADA1  - COMPENSATORY ED EXPEND PER ADA 1974-5                   -9.    0

OPEXADA1  - CURRENT OPERATING EXPEND PER ADA 74-5                   -9.    0

TEXPADA1  - TOTAL EXPENDITURES PER ADA 1974-5                       -9.    0

CAPOADA1  - EXPENDITURE FOR CAPITAL OUTLAY 1974-5                   -9.    0

EQAID74   - EQUALIZATION AID ADA 74-5 = 0 FOR ALL                   -9.    0

ALLPERS1  - TOTAL NUMBER OF PERSONNEL 1974-5                        -9.    0

AVGSALR1  - MEAN SALARY OF ALL PERSONNEL 1974-5                     -9.    0

AVGESAL1  - MEAN ENRICHMENT ABOVE FOUNDATION 74-5                   -9.    0

SALRADA1  -DOLLARS FOR ALL PERSONNEL PER ADA 74-5                   -9.    0

ESALADA1  - ENRICHMENT SALARY PER ADA 1974-5                        -9.    0

BLAKADA2  - NUMBER OF BLACKS IN ADA 1975-6                          -9.    0

SPANADA2  - NUMBER OF CHICANOS IN ADA 1975-6                        -9.    0

ANGLADA2  - NUMBER OF ANGLOS IN ADA 1975-6                          -9.    0

PBLACK2   - PERCENT BLACK PUPILS IN ADA 1975-6                      -9.    0

PSPANIS2  - PERCENT CHICANO PUPILS IN ADA 1975-6                    -9.    0

PANGLO2   - PERCENT ANGLO PUPILS IN ADA 1975-6                      -9.    0

ASRATIO2  - ASSESSMENT-SALES RATIO 1975-6                           -9.    0

EFFTTAX2  -EFFECTIVE TOTAL TAX ON $100 MSA 75-6                   -9.00    2
```

VARIABLE NAME	VARIABLE LABEL	MISSING VALUES	PRT FMT
EFFMTAX2	-EFFECTIVE MAINT TAX ON $100 MSA 75-6	0.0 -9.00	2
MANTTAX2	- EST MAINT TAX REV PER $100 MSA 1975-6	0.0 -9.00	2
ENRIADA2	- LOCAL MAINT ENRICHMENT PER ADA 1975-6	-9.	0
SLFDADA2	- TOTAL FOUNDATION COST PER ADA 75-6	-9.	0
LREVADA2	- LOCAL REVENUE PER ADA 1975-6	-9.	0
SREVADA2	- STATE REVENUE PER ADA 1975-6	-9.	0
FREVADA2	- FEDERAL REVENUE PER ADA 1975-6	-9.	0
TRVADA2	- TOTAL REVENUE PER ADA 1975-6	-9.	0
NONRADA2	- NON REVENUE RECEIPTS PER ADA 1975-6	-9.	0
SFDNADA2	- STATE FOUNDATION AID PER ADA 1975-6	-9.	0
INSTADA2	- INSTRUCTION EXPENDITURE PER ADA 1975-6	-9.	0
SPEDADA2	- SPECIAL ED EXPENDITURE PER ADA 1975-6	-9.	0
VCEDADA2	- VOCATIONAL ED EXPEND PER ADA 1975-6	-9.	0
COMPADA2	- COMPENSATORY ED EXPEND PER ADA 1975-6	-9.	0
OPEXADA2	- CURRENT OPERATING EXPEND PER ADA 75-6	-9.	0
TEXPADA2	- TOTAL EXPENDITURES PER ADA 1975-6	-9.	0
CAPOADA2	- EXPENDITURE FOR CAPITAL OUTLAY 1975-6	-9.	0
EQAID75	- EQUALIZATION AID PER ADA 1975-6	-9.	0
ALLPERS2	- TOTAL NUMBER OF PERSONNEL 1975-6	-9.	0
AVGSALR2	- MEAN SALARY OF ALL PERSONNEL 1975-6	-9.	0

VARIABLE NAME	VARIABLE LABEL	MISSING VALUES	PRT FMT
AVGESAL2	- MEAN ENRICHMENT ABOVE FOUNDATION 75-6	-9.	0
SALRADA2	-DOLLARS FOR ALL PERSONNEL PER ADA 75-6	-9.	0
ESALADA2	- ENRICHMENT SALARY PER ADA 1975-6	-9.	0
NFAMLIES	- NUMBER OF FAMILIES IN DISTRICT 1970	-9.	0
MNINCOME	- MEAN FAMILY INCOME 1970	-9.	0
NPERSONS	- NUMBER OF PERSONS IN DISTRICT 1970	-9.	0
PCTURBAN	- PERCENT OF PERSONS IN URBAN AREAS 1970	-9.	0
NCABVPOV	- NUMBER OF CHILDREN ABOVE POVERTY 1970	-9.	0
NCBELPOV	- NUMBER OF CHILDREN BELOW POVERTY 1970	-9.	0
PTCABPOV	- PCT CHILDREN ABOVE POVERTY 1970	-9.	0
PTCBLPOV	- PCT CHILDREN BELOW POVERTY 1970	-9.	0
POVADA1	- NUMBER OF POVERTY PUPILS IN ADA 1974-5	-9.	0
POVADA2	- NUMBER OF POVERTY PUPILS IN ADA 1975-6	-9.	0
APOVADA1	- PUPILS ABOVE POVERTY IN ADA 1974-5	-9.	0
APOVADA2	- PUPILS ABOVE POVERTY IN ADA 1975-6	-9.	0
PINCOM1	- PCT OF FAMILIES W INCOME UNDER $1,000	-9.	0
PINCOM2	- PCT OF FAMILIES W INCOME $1000 - 1999	-9.	0
PINCOM3	- PCT OF FAMILIES W INCOME $2000 - 2999	-9.	0
PINCOM4	- PCT OF FAMILIES W INCOME $3000 - 3999	-9.	0
PINCOM5	- PCT OF FAMILIES W INCOME $4000 - 4999	-9.	0
PINCOM6	- PCT OF FAMILIES W INCOME $5000 - 5999	-9.	0

VARIABLE NAME	VARIABLE LABEL	MISSING VALUES	PRT FMT
PINCOM7	- PCT OF FAMILIES W INCOME $6000 - 6999	-9.	0
PINCOM8	- PCT OF FAMILIES W INCOME $7000 - 7999	-9.	0
PINCOM9	- PCT OF FAMILIES W INCOME $8000 - 8999	-9.	0
PINCOM10	- PCT OF FAMILIES W INCOME $9000 - 9999	-9.	0
PINCOM11	- PCT OF FAMILIES W INCOME $10000 - 1199	-9.	0
PINCOM12	- PCT OF FAMILIES W INCOME $12000 - 1499	-9.	0
PINCOM13	- PCT OF FAMILIES W INCOME $15000 - 2499	-9.	0
PINCOM14	- PCT OF FAMILIES W INCOME $25000 - 4999	-9.	0
PINCOM15	- PCT OF FAMILIES W INCOME ABOVE $50000	-9.	0
AVALPP74	- ASSESSED VALUE PER ADA 1974-5	-9.	0
AVALPP75	- ASSESSED VALUE PER ADA 1975-6	-9.	0
GRATIO74	- GOER ASSESSMENT-SALES RATIO 1974-5	-9.	0
GRATIO75	- GOER ASSESSMENT-SALES RATIO 1975-6	-9.	0
GTRATE74	- TOTAL TAX PER $100 GOER VALUE 1974	-9.	0
GTRATE75	- TOTAL TAX PER $100 GOER VALUE 1975	-9.	0
GMRATE74	- M + O TAX PER $100 GOER VALUE 1974	-9.	0
GMRATE75	- M + O TAX PER $100 GOER VALUE 1975	-9.	0
ARATIO73	- MSA ASSESSMENT-SALES RATIO 1973	-9.	0
ARATIO74	- MSA ASSESSMENT-SALES RATIO 1974	-9.	0
ARATIO75	- MSA ASSESSMENT-SALES RATIO 1975	-9.	0
ETRATE73	- TOTAL TAX PER $100 MSA VALUE 1973	-9.00	2
ETRATE74	- TOTAL TAX PER $100 MSA VALUE 1974	-9.00	2
ETRATE75	- TOTAL TAX PER $100 MSA VALUE 1975	-9.00	2
EMRATE73	- M + O TAX PER $100 MSA VALUE 1973	-9.00	2
EMRATE74	- M + O TAX PER $100 MSA VALUE 1974	-9.00	2
EMRATE75	- M + O TAX PER $100 MSA VALUE 1975	-9.00	2

FLORIDA SCHOOLS FILE

A. Physical Characteristics

1. Tape ID: (VOL=SER=) SCHOOL
2. Number of tracks: 9
3. Density: 1600 bpi
4. DSN: FLASCH.FIN
5. LABEL: (7,SL)
6. Record type: fixed blocked
7. Record length: 125
8. Blocksize: 5000
9. Number of records: 15,568
10. Data representation: ABCDIC

B. General Description

1. Each record contains data for one school in one special program, according to FORTRAN format (3F8.0,11A4,F8.3,F1.0,SF8.4,F8.2). There are 1,946 schools.
2. Records for all schools (N=1946) on a particular program are consecutive; the program record sets appear in the following order: 1) k to 3, 2) 4 to 9, 3) 10 to 12, 4) EMR, 5) TMR, 6) physical handicaps, 7) social handicaps, and 8) gifted.
3. Data Source: financial and enrollment data tapes from the Florida State Department of Education, 1975-76 school year.

C. Layout: List of Variables

VARIABLE NAME	VARIABLE LABEL	MISSING VALUES	PRT FMT
NTOTAL	TOTAL NUMBER OF STUDENTS	NONE	0
DID1	DISTRICT ID NUMBER FROM FINANCE FILE	NONE	0
SID1	SCHOOL ID NUMBER FROM FINANCE FILE	NONE	0
DNAME1	DISTRICT NAME - PART 1	NONE	A
DNAME2	DISTRICT NAME - PART 2	NONE	A
DNAME3	DISTRICT NAME - PART 3	NONE	A
SNAME1	SCHOOL NAME - PART 1	NONE	A
SNAME2	SCHOOL NAME - PART 2	NONE	A
SNAME3	SCHOOL NAME - PART 3	NONE	A
SNAME4	SCHOOL NAME - PART 4	NONE	A
SNAME5	SCHOOL NAME - PART 5	NONE	A
SNAME6	SCHOOL NAME - PART 6	NONE	A
SNAME7	SCHOOL NAME - PART 7	NONE	A
SNAME8	SCHOOL NAME - PART 8	NONE	A
FTE	UNWEIGHTED FULL TIME EQUIVILENT STUDENTS	NONE	2
PROGTYPE	PROGRAM TYPE CODE: 1 = k through 3 2 = 4 through 9 3 = 10 through 12 4 = EDUCABLE MENTALLY RETARDED 5 = TRAINABLE MENTALLY RETARDED 6 = PHYSICALLY HANDICAPPED 7 = SOCIALLY HANDICAPPED 8 = GIFTED	NONE	0

VARIABLE NAME	VARIABLE LABEL	MISSING VALUES	PRT FMT
PANGLO	PERCENT ANGLO STUDENTS	NONE	0
PBLACK	PERCENT BLACK STUDENTS	NONE	0
PSPAN	PERCENT HISPANIC STUDENTS	NONE	0
PASIAN	PERCENT ASIAN STUDENTS	NONE	0
PINDIAN	PERCENT INDIAN STUDENTS	NONE	0
TEXPFTE	TOTAL EXPENDITURE PER FTE	NONE	0

MEMORANDUM

TO: Albert Cortez

FROM: Bob Brischetto BB

RE: Final revisions suggested by NIE for Volume 1

DATE: January 7, 1980

Attached please find the original to Volume 1 with corrections completed as suggested by Jim Foxx of NIE. This Volume is ready for duplicating. I would suggest ten (10) copies be made initially, five of which would be sent to NIE and three (3) for me.

I talked with Jim Foxx this morning and he indicated his critique of Volume 9 would be forthcoming at the end of this week. Let's keep our fingers crossed.

cc: Dr. José A. Cardenas
Pat Perillo